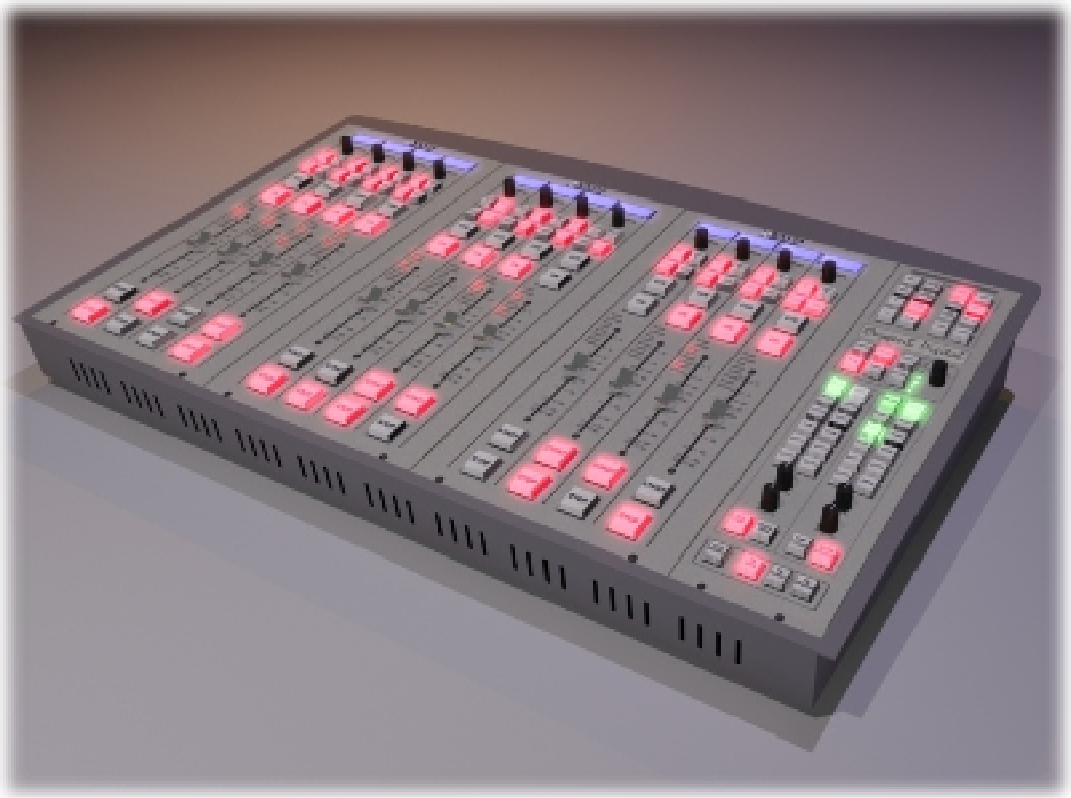
OXYGEN 5 DIGITAL

User Manual

Broadcast Audio Mixing Console

(Rev. 2.6 ENG)



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SAFETY WARNINGS / ISTRUZIONI PER LA SICUREZZA

SAFETY WARNINGS

CONSIGNES DE SÉCURITÉ IMPORTANTES

ISTRUZIONI IMPORTANTI PER LA SICUREZZA

WICHTIGE SICHERHEITSHINWEISE

INSTRUCCIONES IMPORTANTES DE SEGURIDAD

(Rel. 1.3)

FOREWORD

For your own safety and to avoid invalidation of the warranty all text marked with these Warning Symbols should be read carefully.

Information in this manual is subject to change without notice and does not represent a commitment on the part of the vendor.

The manufacturer shall not be liable for any loss or damage whatsoever arising from the use of information or any error contained in this manual, or through any mis-operation or fault in hardware contained in the product.

It is recommended that all maintenance and service on the product should be carried out by the manufacturer or its authorised agents. The manufacturer cannot accept any liability whatsoever for any loss or damage caused by service, maintenance or repair by unauthorised personnel.

SAFETY WARNINGS

The installation and servicing instructions in this manual are for use by qualified personnel only.

- **Read All Instructions.** All safety and operating instructions must be read before operating the product. They also must be retained for future reference, as it contains a number of useful hints for determining the best combination of equipment settings for Yr particular application.
- **Heed All Warnings**. All warnings on the product and those listed in the operating instructions must be adhered to.
- **Heat**. This product must be situated away from any heat sources such as radiators or other products (including power amplifiers or transmitters) that produce heat.
- **Power Sources.** This product must be operated from the type of power source indicated on the marking label and in the installation instructions. If you are not sure of the type of power supplied to your facility, consult your local power company. Make sure the AC main voltage corresponds to that indicated in the technical specifications. If a different voltage (ex. 110/115 VAC) is available, open the equipment closure and set the voltage switch on the main supply circuit, located behind the AC socket
- **Power Cord Protection.** Power supply cords must be routed so that they are not likely to be walked on nor pinched by items placed upon or against them. Pay particular attention to the cords at AC wall plugs and convenience receptacles, and at the point where the cord plugs into the product
- **Use only with a cart,** stand, tripod, bracket, or table specified by the manufacturer, or sold with the apparatus. When a cart is used, use caution when moving the cart/apparatus combination to avoid injury from tip-over.
- **Lightning**. For added protection for this product during a lightning storm, or when it is left unattended and unused for long periods of time, unplug it from the AC wall outlet and the audio connections. This will prevent damage to the product due to lightning and power line surges
- **Installation**. Configuration and installation should only be carried out by a competent installation engineer
- **Cabling**. Using high quality wires, well protected. Make sure the cable integrity.

This symbol alerts you to the presence of dangerous voltage inside the closure – voltage which may be sufficient to constitute a risk of shock. Do not perform any servicing other than that contained in the operating instructions. Refer all servicing to qualified personnel

The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

Do not change the voltage setting or replace the mains fuse without first turning the unit off and unplugging the mains cord

Make sure the AC main voltage corresponds to that indicated in the technical specifications.
THIS APPARATUS MUST BE EARTHED !

To avoid risk of fire use the correct value fuse, as indicated on the label stuck on the right side of the unit.

This apparatus uses a single pole mains switch and does therefore not separate the unit completely from the mains power. To completely separate from mains power (f.i. in the event of danger) unplug mains power cord. As the MAINS plug is the disconnect device, the disconnect device shall remain readily operable.

CONSIGNES DE SÉCURITÉ IMPORTANTES

- **Lire ces consignes**
- **Conserver ces consignes**
- **Observer tous les avertissements**
- **Suivre toutes les consignes**
- **Ne pas utiliser cet appareil à proximité de l'eau**
- **Ne pas obstruer les ouvertures de ventilatio**n. Installer en respectant les consignes du fabricant
- **Ne pas installer à proximité d'une source de chaleur** telle qu'un radiateur, une bouche de chaleur, un poêle ou d'autres appareils (dont les amplificateurs) produisant de la chaleur.
- **Ne pas annuler la sécurité de la fiche de terre**, la troisième branche est destinée à la sécurité. Si la fiche fournie ne s'adapte pas à la prise électrique, demander à un électricien de remplacer la prise hors normes.
- **Protéger le cordon d'alimentation** afin que personne ne marche dessus et que rien ne le pince, en particulier aux fiches, aux prises de courant et au point de sortie de l'appareil
- **Utiliser uniquement les accessoires spécifiés par le fabricant**
- **Utiliser uniquement avec un chariot**, un support ou une table spécifié par le fabricant ou vendu avec l'appareil. Si un chariot est utilisé, déplacer l'ensemble chariot–appareil avec précaution afin de ne pas le renverser, ce qui pourrait entraîner des blessures
- **Débrancher l'appareil** pendant les orages ou quand il ne sera pas utilisé pendant longtemps.
- **Confier toute réparation à du personnel qualifié.** Des réparations sont nécessaires si l'appareil est endommagé d'une façon quelconque, par exemple: cordon ou prise d'alimentation endommagé, liquide renversé ou objet tombé à l'intérieur de l'appareil, exposition de l'appareil à la pluie ou à l'humidité, appareil qui ne marche pas normalement ou que l'on a fait tomber.
- **NE PAS exposer cet appareil aux égouttures et aux éclaboussements**. Ne pas poser des objets contenant de l'eau, comme des vases, sur l'appareil

Ce symbole indique la présence d'une tension dangereuse dans l'appareil constituant un risque de choc électrique.

Ce symbole indique que la documentation fournie avec l'appareil contient des instructions d'utilisation et d'entretien importantes.

Avant de modifier le commutateur de changement de tension ou replacer le fusible il faut débrancher l'appareil de la prise électrique. Pendant son usage, l'appareil doit etre branchee à la prise de terre

Utiliser le fusible principal AC avec le valeur qui est indiquée sur l'étiquette collée sur le coffret.

Assurez-vous que la tension principale AC correspond à celle indiquée dans les spécifications techniques.

L'interrupteur d'alimentation interrompt un pôle du réseau d'alimentation excepté le conducteur de terre de protection. En cas de danger, debrancher le cordon d'alimentation. Parce que la prise du réseau de alimentation est utilisée comme dispositif de déconnexion, ce dispositif doit demeuré aisément accessible

ISTRUZIONI IMPORTANTI PER LA SICUREZZA

- **Leggere le presenti istruzioni**
- **Conservare queste istruzioni**
- **Osservare tutte le avvertenze**
- **Seguire scrupolosamente tutte le istruzioni**
- **Non usare questo apparecchio in prossimità di acqua**
- **Non ostruire alcuna apertura per il raffreddamento**. Installare l'apparecchio seguendo le istruzioni
- **Non installare l'apparecchio accanto a fonti di calore** quali radiatori, aperture per l'afflusso di aria calda, forni o altri apparecchi (amplificatori inclusi) che generino calore
- **Non rimuovere il terminale di connessione a terra sul cordone di alimentazione**: esso ha lo scopo di tutelare l'incolumità dell'utilizzatore. Se la spina in dotazione non si adatta alla presa di corrente, rivolgersi ad un elettricista per far eseguire le modifiche necessarie.
- **Evitare di calpestare il cavo di alimentazione o di comprimerlo**, specialmente in corrispondenza della spina e del punto di inserzione sull'apparato.
- **Utilizzare solo dispositivi di collegamento e gli accessori specificati dal produttore.**
- **Utilizzare l'apparecchio** solo con un carrello, un sostegno, una staffa o un tavolo di tipo specificato dal produttore o venduto insieme all'apparecchio. Se si utilizza un carrello, fare attenzione negli spostamenti per evitare infortuni causati da ribaltamenti del carrello stesso.
- **Scollegare l'apparecchio dalla presa di corrente** durante i temporali o quando inutilizzato a lungo
- **Per qualsiasi intervento**, rivolgersi a personale di assistenza qualificato. E' necessario intervenire sull'apparecchio ogniqualvolta si verificano danneggiamenti di qualsiasi natura. Ad esempio, la spina o il cavo di alimentazione sono danneggiati, è entrato liquido nell'apparecchio o sono caduti oggetti su di esso, l'apparecchio è stato esposto alla pioggia o all'umidità, non funziona normalmente o è caduto.
- **Non esporre a sgocciolamenti o spruzzi**. Non appoggiare sull'apparecchio oggetti pieni di liquidi, ad esempio vasi da fiori.

Questo simbolo indica la presenza di alta tensione all'interno dell'apparecchio, che comporta rischi di scossa elettrica.

Questo simbolo indica la presenza di istruzioni importanti per l'uso e la manutenzione nella documentazione in dotazione all'apparecchio.

Non sostituire il fusibile o cambiare la tensione di alimentazione senza aver prima scollegato il cordone di alimentazione. L'APPARATO DEVE ESSERE CONNESSO A TERRA.

Sostituire il fusibile generale con uno di identico valore, come indicato sulla etichetta applicata sul mobile dell'apparato

Assicurarsi che la tensione di rete corrisponda a quella per la quale è configurato l'apparecchio

Questo apparato utilizza un interruttore di alimentazione di tipo unipolare e l'isolamento dalla rete elettrica non è pertanto completo. Per ottenere un isolamento totale (ad esempio in caso di pericolo), scollegare il cordone di alimentazione. Inoltre, poichè la spina di alimentazione è utilizzata come dispositivo di sezionamento, essa deve restare facilmente raggiungibile

WICHTIGE SICHERHEITSHINWEISE

- **Diese Hinweise LESEN**
- **Diese Hinweise AUFHEBEN**
- **Alle Warnhinweise BEACHTEN**
- **Alle Anweisungen BEFOLGEN**
- **Dieses Gerät NICHT in der Nähe von Wasser verwenden**
- **KEINE Lüftungsöffnungen verdecken**. Gemäß den Anweisungen des Herstellers einbauen
- **Nicht in der Nähe von Wärmequellen**, wie Heizkörpern, Raumheizungen, Herden oder anderen Geräten (einschließlich Verstärkern) installieren, die Wärme erzeugen
- **Die Schutzfunktion des Schukosteckers NICHT umgehen**. Bei Steckern für die USA gibt es polarisierte Stecker, bei denen ein Leiter breiter als der andere ist; US-Stecker mit Erdung verfügen über einen dritten Schutzleiter. Bei diesen Steckerausführungen dient der breitere Leiter bzw. der Schutzleiter Ihrer Sicherheit. Wenn der mitgelieferte Stecker nicht in die Steckdose passt, einen Elektriker mit dem Austauschen der veralteten Steckdose beauftragen
- **VERHINDERN, dass das Netzkabel gequetscht oder darauf getreten wird**, insbesondere im Bereich der Stecker, Netzsteckdosen und an der Austrittsstelle vom Gerät
- N**UR das vom Hersteller angegebene Zubehör** und entsprechende Zusatzgeräte verwenden.
- **NUR in Verbindung** mit einem vom Hersteller angegebenen oder mit dem Gerät verkauften Transportwagen, Stand, Stativ, Träger oder Tisch verwenden. Wenn ein Transportwagen verwendet wird, beim Verschieben der Transportwagen-Geräte- Einheit vorsichtig vorgehen, um Verletzungen durch Umkippen
- **Das Netzkabel dieses Geräts** während Gewittern oder bei längeren Stillstandszeiten aus der Steckdose ABZIEHEN.
- **Alle Reparatur- und Wartungsarbeiten** von qualifiziertem Kundendienstpersonal DURCHFÜHREN LASSEN. Kundendienst ist erforderlich, wenn das Gerät auf irgendwelche Weise beschädigt wurde, z.B. wenn das Netzkabel oder der Netzstecker beschädigt wurden, wenn Flüssigkeiten in das Gerät verschüttet wurden oder Fremdkörper hineinfielen, wenn das Gerät Regen oder Feuchtigkeit ausgesetzt war, nicht normal funktioniert oder fallen gelassen wurde.
- **Dieses Gerät vor Tropf- und Spritzwasser SCHÜTZEN**. KEINE mit Wasser gefüllten Gegenstände wie zum Beispiel Vasen auf das Gerät STELLEN.

Dieses Symbol zeigt an, dass gefährliche Spannungswerte, die ein Stromschlagrisiko darstellen, innerhalb dieses Geräts auftreten.

Dieses Symbol zeigt an, dass das diesem Gerät beiliegende Handbuch wichtige Betriebs- und Wartungsanweisungen enthält.

Vor Änderung der Netzspannung oder Sicherungswechsel Netzkabel trennen.
Das Gerät muss für den Betrieb geerdet werden.

Hauptsicherung nur mit einer gleichwertigen austauschen
(s. entsprechende Etikette).

Vor Einschalten Netzspannungseinstellung am Gerät überprüfen bzw. anpassen.

Inpoliger Netzschalter. In Notfälle oder für Wartungsarbeiten Netzkabel trennen. Der Netzstecker fungiert auch als Trennelement muss deshalb zugänglich bleiben

INSTRUCCIONES IMPORTANTES DE SEGURIDAD

- **LEA estas instrucciones**
- **CONSERVE estas instrucciones**
- **PRESTE ATENCION a todas las advertencias.**
- **SIGA todas las instrucciones**
- **NO utilice este aparato cerca del agua**
- **NO obstruya ninguna de las aberturas de ventilación.** Instálese según lo indicado en las instrucciones del fabricante
- **No instale el aparato cerca de fuentes de calor** tales como radiadores, registros de calefacción, estufas u otros aparatos (incluyendo amplificadores) que produzcan calor
- **NO anule la función de seguridad del enchufe polarizado** o con clavija de puesta a tierra. Un enchufe polarizado tiene dos patas, una más ancha que la otra. Un enchufe con puesta a tierra tiene dos patas y una tercera clavija con puesta a tierra. La pata más ancha o la tercera clavija se proporciona para su seguridad. Si el toma corriente no es del tipo apropiado para el enchufe, consulte a un electricista para que sustituya el toma corriente de estilo anticuado
- **PROTEJA el cable eléctrico** para evitar que personas lo pisen o estrujen, particularmente en sus enchufes, en los toma corrientes y en el punto en el cual sale del aparato
- **UTILICE únicamente los accesorios especificados por el fabricante**
- **UTILICESE únicamente** con un carro, pedestal, escuadra o mesa del tipo especificado por el fabricante o vendido con el aparato. Si se usa un carro, el mismo debe moverse con sumo cuidado para evitar que se vuelque con el aparato
- **DESENCHUFE el aparato** durante las tormentas eléctricas, o si no va a ser utilizado por un lapso prolongado.
- **TODA reparación** debe ser llevada a cabo por técnicos calificados. El aparato requiere reparación si ha sufrido cualquier tipo de daño, incluyendo los daños al cordón o enchufe eléctrico, si se derrama líquido sobre el aparato o si caen objetos en su interior, si ha sido expuesto a la lluvia o la humedad, si no funciona de modo normal, o si se ha caído.
- **NO exponga** este aparato a chorros o salpicaduras de líquidos. NO coloque objetos llenos con líquido, tales como floreros, sobre el aparato .

Este símbolo indica que la unidad contiene niveles de voltaje peligrosos que representan un riesgo de choques eléctricos.

Este símbolo indica que la literatura que acompaña a esta unidad contiene instrucciones importantes de funcionamiento y mantenimiento.

Antes de cambiar la alimentacion de voltaje o de cambiar el fusible, desconecte el cable de alimentacion. Para reducir el riesgo de descargas electricas, esta unidad debe ser conectada a tierra.

Remplaze el fusible con lo mismo, que corresponde a lo indicado en el panel del equipo.

Antes de encender, controlar que la linea de alimentacion de voltaje corresponda a la indicada

El interruptor de alimentación es unipolar. En el caso de peligro, desconecte el cable de alimentación. Porque la clavija de conexion a red sirve por la desconection de la unidad, la clavija debe ser ubicada en proximidad de la unidad

UNPACKING AND INSPECTION

Your equipment was packed carefully at the factory in a container designed to protect the unit during shipment. Nevertheless, we recommend making a careful inspection of the shipping carton and the contents for any signs of physical damage.

Damage & Claims

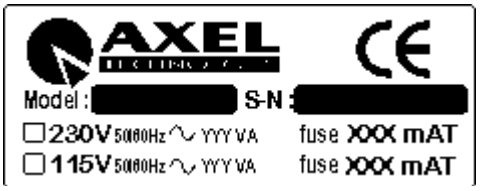
If damage is evident, do not discard the container or packing material. Contact your carrier immediately to file a claim for damages. Customarily, the carrier requires you, the consignee, to make all damage claims. It will be helpful to retain the shipping documents and the waybill number.

Save all packing materials! If You should ever have to ship the unti (e.g. for servicing), it is best to ship it in the original carton with its packing materials because both the carton and packing material have been carefully designed to protect the unit.

Under normal conditions no user maintenance or calibration are required. Internal links and preset controls may be set to configure the unit during installation. **Any service work required should be carried out by qualified service personnel only.**
We are able to offer further product support through our worldwide network of approved dealers and service agents.

To help us provide the most efficient service please would you keep a record of the unit serial number, and date and place of purchase to be quoted in any communication regarding this product.

The actual equipment Serial Number is indicated on the silver label stuck on the rear panel of the equipment closure.



Tools And Equipment Needed

Only standard technician's tools are required to install this equipment.

FIRST INSTALLATION RECOMMENDATIONS

POWER SUPPLY CABLE

A power supply cable of approx. 2 mt length is supplied with the device, which has a moulded IEC plug attached – this is a legal requirement.
The type of plug for the power supply depends on the country in which it is delivered.

If for any reason, you need to use this appliance with a different plug, you should use the following wiring guidelines in replacing the exsisting plug with the new one:

Earth	Green, or green and yellow
Neutral (N)	Blue
Live (L)	Brown

Supply cables should be laid in such a manner that one does not step or walk on them. They should not be squashed by any objects.

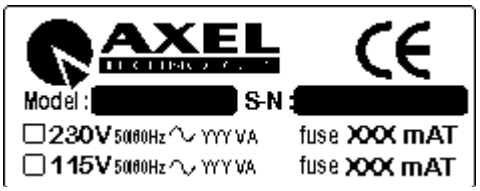
THIS EQUIPMENT MUST BE EARTHED.

The chassis is always connected to mains earth to ensure your safety: check your mains wiring and earthing before switching on.

AC MAINS VOLTAGE SETTING (230 V / 115 V)

BE SURE THAT THE UNIT IS SET TO THE CORRECT MAINS/LINE VOLTAGE FOR YOUR COUNTRY BEFORE PLUGGING IT INTO THE WALL OUTLET !

The actual Mains voltage is indicated on the label stuck on the equipment closure. Should the type of power at the operation location not be known, please contact your dealer or electricity company.



If, for some reason, the unit is to be operated at a mains input voltage which is different to that as supplied, you need to switch the voltage selector on the right side of the unit. You also need to replace the AC main fuse, according to information provided on the external label or on the Technical Specifications table at the end of this user manual.

CAUTION: TO REDUCE THE RISK OF ELECTRICAL SHOCK, ALWAYS DISCONNECT THE AC MAINS CABLE BEFORE ALTERING THE CHANGE-OVER SWITCH. NO USER SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

FUSE REPLACEMENT

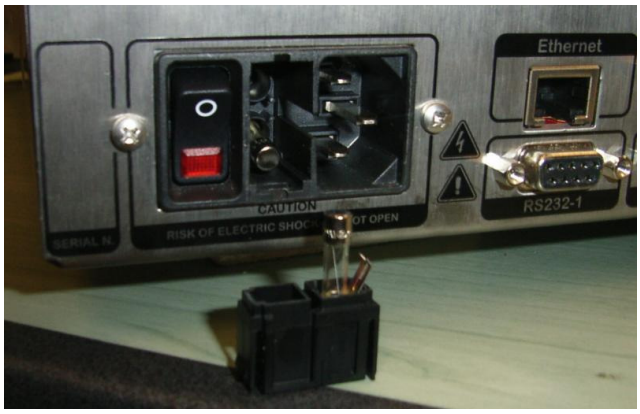
The power supply socket has an integral fuse drawer containing the AC power fuse and a spare, both of the same value.

BEFORE REPLACING THE POWER FUSE, MAKE SURE YOU HAVE THE RIGHT TYPE OF FUSE FOR THE VOLTAGE TO BE PROTECTED.
USING WRONG FUSE TYPE WILL RESULT IN INSUFFICIENT PROTECTION.

Make sure that the power is switched off and the power cable is disconnected from the equipment.

a. Open the fuse drawer using a small blade screwdriver.

b. Replace the fuse located at the internal position



c. Push the fuse socket back into the original position (a.)

Perform the set-up under static control conditions. Static charges are likely to completely destroy one or more of the CMOS semiconductors employed in the unit. Static damage will not be covered under warranty.
Basic damage prevention consists of minimizing generation, discharging any accumulated static charge on your body and preventing that discharge from being sent to or through any electronic component.

Uninsulated dangerous voltage are inside the enclosure, voltage that may be sufficient to constitute a risk of shock.
Always disconnect to AC Mains before removing the top cover

PROTECTION AGAINST LIGHTNING

Should the device be put out of action due to being struck by lightning or excess voltage, disconnect it from the power supply without delay. Do not reconnect until the device has been checked. If in doubt contact the technical support service.

Make sure there is suitable lightning protection to protect the device.
Alternatively you should disconnect all connectors from the device during a storm or when the device is going to be unsupervised or not used for a longer period of time.
These measures will protect against damage by lightning or excess voltage.

VENTILATION

The equipment will operate as a free-standing unit without requiring any special cooling arrangement. However, slots and openings in the product are provided for ventilation. They ensure reliable operation of the product, keeping it from overheating. These openings must not be blocked nor covered during operation.
YOU MUST LEAVE AT A MINIMUM ONE RACK UNIT OF EMPTY SPACE ABOVE THE EQUIPMENT TO ENHANCE VENTILATION AND TO GET A LONGER EQUIPMENT LIFE.

2 Introduction

This manual will give you an overview of the functionality of the Oxygen 5 Digital audio system and all its features. It is advisable to read this manual at least once before touching any control, or even thinking about hooking up the system. We know that this is actually the first thing you want to do, but please do not and discipline yourself to read the manual first.

The manual gives all sorts of valuable information before getting started and it saves you from getting all sorts of questions. After installing this manual can be used as a reference.

In the first chapter, we shall give you an overview of the Oxygen 5 Digital and its features. This way, you have an impression on how to implement the system in your application.

The next chapters will deal with interconnecting the various parts of the system and its external interfacing with your equipment

When installing and wiring the Oxygen 5 Digital, you can finalize its interfacing with the instructions in the following chapters.

After installation, you will have a very complete mixer with a human interface that is very logical and intuitive.

3 System overview

The Oxygen 5 Digital is a digital modular audio system that can solve your digital mixing/routing requirements in your broadcast studio or in your complete broadcast facility. The modular system can be used in all your mixing/routing applications like on-air broadcast, self-op, production and voice tracking.

3.1 System parts

To make a functional mixing console you require at least a 19" rack with a DSP card (32 stereo channels), the desired I/O cards and a control surface that can control all the mixing power. The connection between the 19" rack(s) and control surface(s) rely on a network protocol that is been called MambaNet.
MambaNet works on Ethernet layer 2, there for no IP-addresses have to be setup for the 'real-time' functionality.

WARNING: Do not connect multiple Oxygen 5 Digital engines/racks in the same Ethernet network (Layer 2)

To connect surface(s) and 19" rack(s) you can built on this known Ethernet standard with common switches till advanced managed switches with all the security solutions as there are STP (spanning tree protocol), Trunking etc.

For (remote) configuration the well known webbrowser is used to access the consoles webserver. Of course this happens on a IP-based level of communication, which makes it possible to configure system over the internet.

The defaults IP-addresses for configuration pages are:
http://192.168.0.200 for the configuration in main menu
http://192.168.0.23x for the controller surface configuration. (for the first surface set *x* to 4, for a second surface set x to 5, etc).

To prevent other people to access the Oxygen 5 Digital configuration pages you need to logon.
The default logon is:
Username: service
Password: service

This account may change, which is explained in Appendix B.

Network specialists can find some more information in chapter 16 (Appendix A).

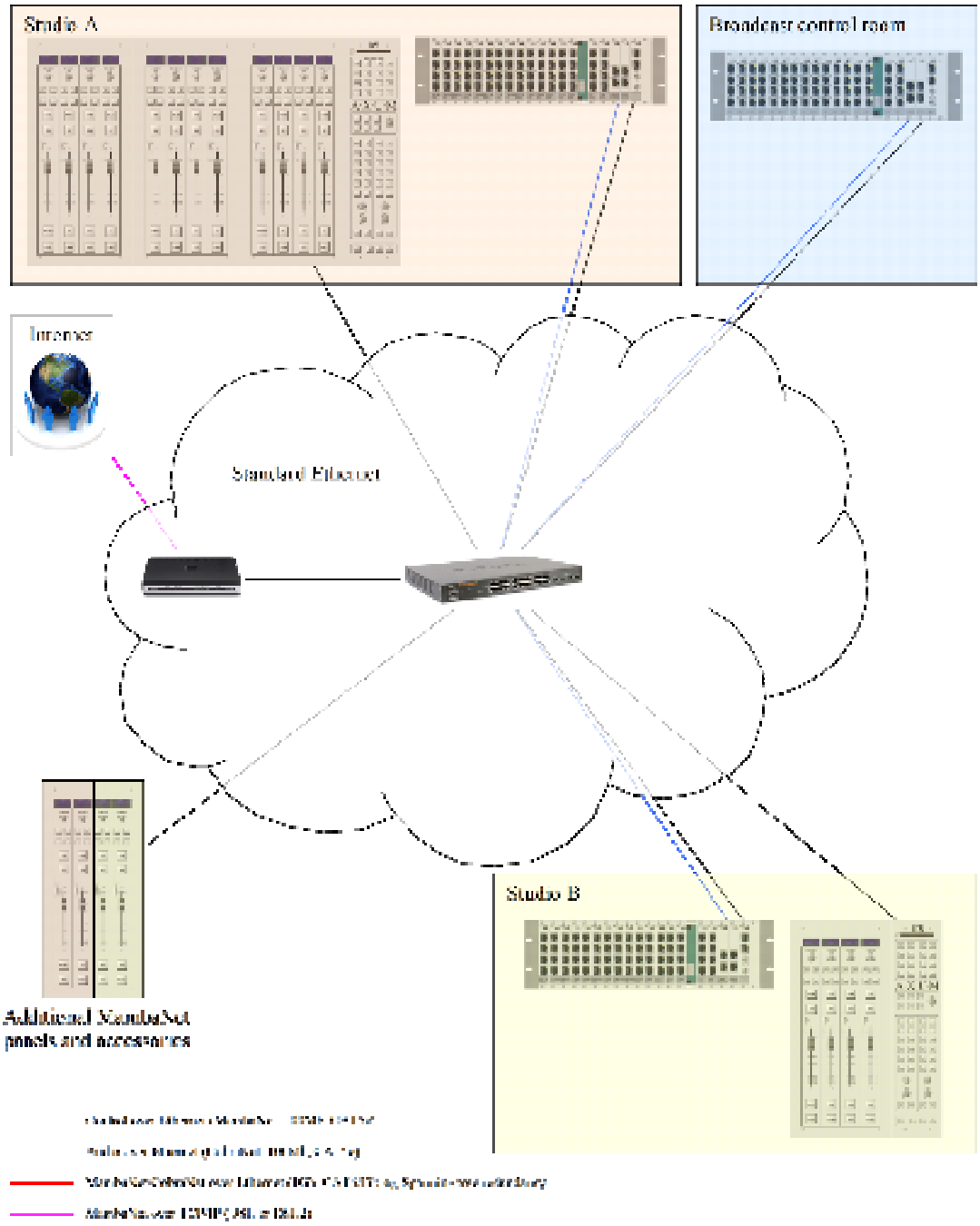


Figure 1: Basic system layout

3.2 Communication

All control communication takes place with MambaNet and gives the surface flexibility and power to the Oxygen 5 Digital digital audio system. To understand the Oxygen 5 Digital audio system it would help to know some principles of MambaNet.

MambaNet definitions:

- *Objects*
  a fader, switch will have to trigger an action in the Oxygen 5 Digital digital audio system. In MambaNet, we call these faders and switches 'objects'.

- *Nodes*
  In hardware the faders and switches are grouped on modular blocks (think of a single PCB), such blocks are represented as 'nodes' in MambaNet.

- *Engine*
  In the Oxygen 5 Digital digital system the engine is in fact your mixing console. The functions available in the 'engine' can connect to one or more objects found in your network.

In practice, this means you can connect any surface element like switches and faders to any function of your mixing console(s). From now on, you can design your own functionality at the control surface.

Information for manufacturers and developers is located at http://www.mambanet.org, its possible to make your own communication with the mixing system; we have a MambaNet library available for Windows (DLL) and Linux (lib).
For professional developers it is possible to buy a Manufacture ID from Axel Technology so you are able to make your own equipment compatible with the MambaNet protocol. Secondly, local radio stations can use manufacturer ID 0xFFFF for some custom implementations.
(Al manufacturer IDs are unique except the 0xFFFF, which is free for 'in-house' implementation)

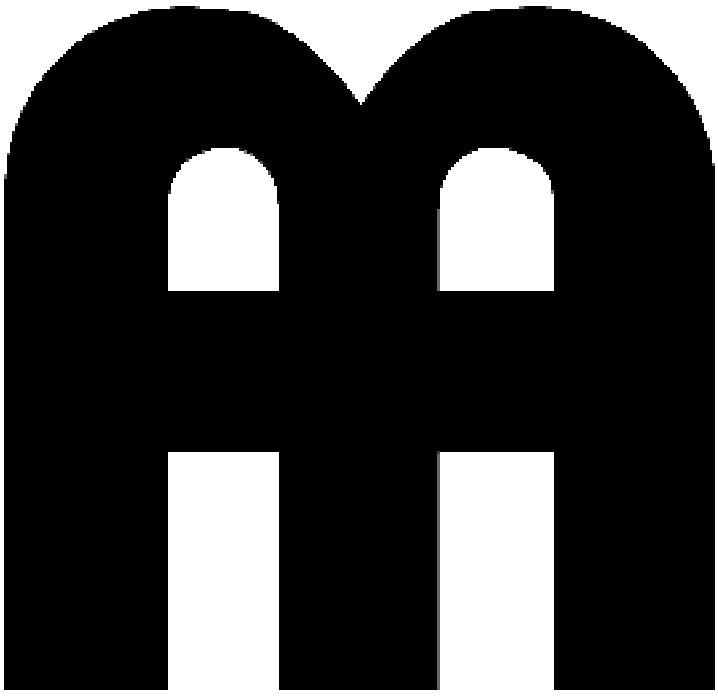


Figure 2: MambaNet logo

3.3 Features and highlights

Because the Oxygen 5 Digital audio system is highly flexible, you can make many solutions for your mixing and routing. To have an overview on the power of the Oxygen 5 Digital digital audio system we made a list of the most important features and highlights:

- I/O Matrix of 1280x1280 with optional I/O Cards:
  - MIC inputs and GPIO's
  - Line inputs and GPIO's
  - Digital in/outputs and GPIO's
  - Line outputs and GPIO's
  - CRM/Phones outputs and GPIO's
  - ADAT in/outputs
  - CobraNet in/outputs
  - Firewire in/outputs
  - Hybrid in/outputs
- 32 stereo modules per DSP card.
  - Gain
  - Low cut
  - 6 band full parametric EQ
  - Voice processing
  - one free FX DSP for future use.
- 32 busses, default configured if:
  console 1 and 2 with each a:
  - Stereo Program buss
  - Stereo Sub buss
  - 4x Stereo Aux buss
  - Stereo Dump buss
  - Stereo PFL buss
- Up to 4 DSP cards
  - up to 128 stereo modules
  - up to 16 monitor busses.

  (for example it is possible to make 4 studios with one I/O rack, or even 2 studios of 16 stereo modules and 2 stereo monitor busses with a single DSP card in your I/O rack…)
- Advanced preset system.
- Object oriented control protocol, MambaNet
- Configuration of the Oxygen 5 Digital nodes using one web server
- Multiple redundancy solutions
- Remote configuration via HTTP and TCP/IP
- Remote control via MambaNet over TCP/IP
- Standardized cabling with RJ45 (shielded for audio connections)

3.4 Principle of operation

3.4.1 Oxygen 5 Digital system

The Oxygen 5 Digital system will be build up around the matrix/router that gives a lot of routing flexibility. Up to 4 DSP cards can be inserted to create mixing power as requested. For example, you can create with one Oxygen 5 Digital system (equipped with one DSP card):

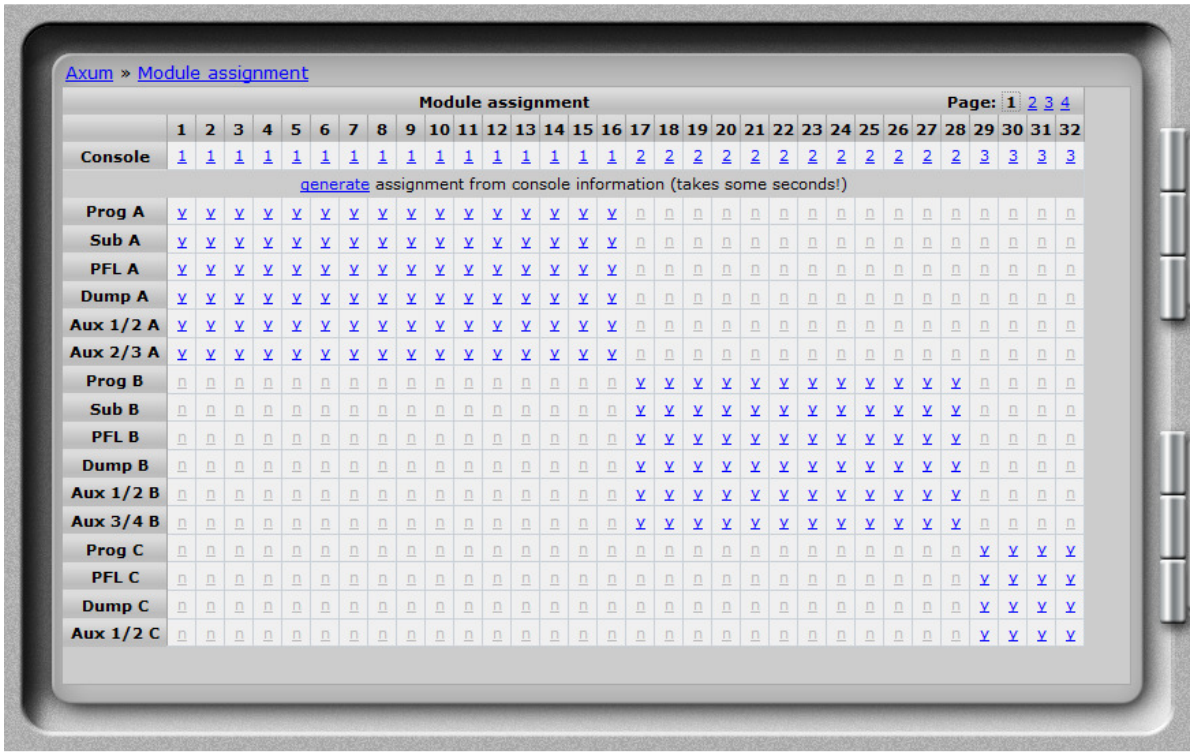
- A single mixing console with 32 stereo modules and 16 stereo busses
- Multiple mixing consoles (maximal 4), 3 consoles are used in our example:
  1 consoles with 16 stereo modules and 6 stereo busses
  1 consoles with 12 stereo modules and 6 stereo busses
  1 console 4 stereo modules and 4 stereo busses

This makes clear we do not talk over a 'mixing console', the Oxygen 5 Digital is an audio-platform! Depending on the configuration, you can make your own studio console(s)/surface funcionality. Al this power is controlled and configured by the Oxygen 5 Digital engine. This engine configuration is described in detail later on.

3.4.2 Mixing console

As mentioned before the configuration is done within the Oxygen 5 Digital engine, now we will give a short overview/introduction on the structure of the mixing console(s) platform solution of the engine.

For the configuration of the busses, monitor busses and modules you can setup to which console it should belong (1-4). Finally the engine will extract a 'assignment' picture from this information which shows clearly the console blocks.



3.4.2.1 Sources

Each module can receive audio from the matrix using so called 'sources'. A source is given a name, left/right physical input and some additional settings (think of phantom, pad, redlight settings). For example if we make source 'MIC1' with phantom on we can route this to module 1 and/or module 13. So the MIC 1 is used at console 1 but also at console 2 (or 3).

3.4.2.2 Destinations

Audio is sent to physical outputs by so called 'destinations'. A destinations given a name, left/right physical outpus and some additional settings (default audio-source, N-1 etc). For examples we make destinations 'Line out 1' and 'Dig out 1' which both get the audio from 'Prog A'.

3.4.2.3 Console/Surface functionality

After the consoles are set-up/configured and the inputs and outputs are set-up with the correct settings if sources/destinations you can start using the console functionality. Which functionality is available depends on the configuration of the system.
It is important to make the required 'real-time' functionality available via de surface and rack configuration menu's. Actually here you define the 'knob functions'.

3.4.2.4 Console startup/Presets

If the console start up it will load the last backup or the programmed defaults, this depends on a setting in global configuration.

The programmed defaults are:
- The information set within the webbrowser pages
- For the modules 'module preset 1A' is selected by default.

Further in live use of the console(s) you can make use of presets:
- Processing presets
- Module presets
- Console presets

processing preset:
A processing preset contains module-settings (think of EQ, Dynamics etc. etc).
When a source is selected by the control surface encoder, the assigned default processing preset is loaded.

Module preset:
The module preset 1A t/m 4B defines a combination of: Source, Processing preset and Routing preset.
In this case if module preset 1B is recalled:
- The configured 'preset 1B source' is set on the module
- The corresponding processing preset is set on the module. Processing preset field that not override the module will set according to the module configuration settings (if 'Use at source select' is active).
- The routing as given by 'module preset 1B' is restored.

Console preset:
The console preset consists of two main parameters:
- It loads Module preset 1A, 1B, 2A, 2B, 3A, 3B, 4A or 4B.
- It loads a buss/monitor buss preset.

Here also you can define if a separate buss is used within the preset (the configuration setting 'Use' – Yes/No).

In general you can say:
- The console will startup in the defaults like given in the webpage.

- When a source is selected (can also be in the startup-defaults) the corresponding processing preset is loaded.
- When a module preset is loaded, the complete module settings can be preset.
- With the console preset you are able to change: module-settings , buss master en monitor buss settings.

4 Control Surfaces

The engine will recognize the control surfaces of the Oxygen 5 Digital audio system as 'nodes with objects'. Each object can connect to an engine (mixing console) function.
Below you see an example of a control surface and a short description of the node/object structure.

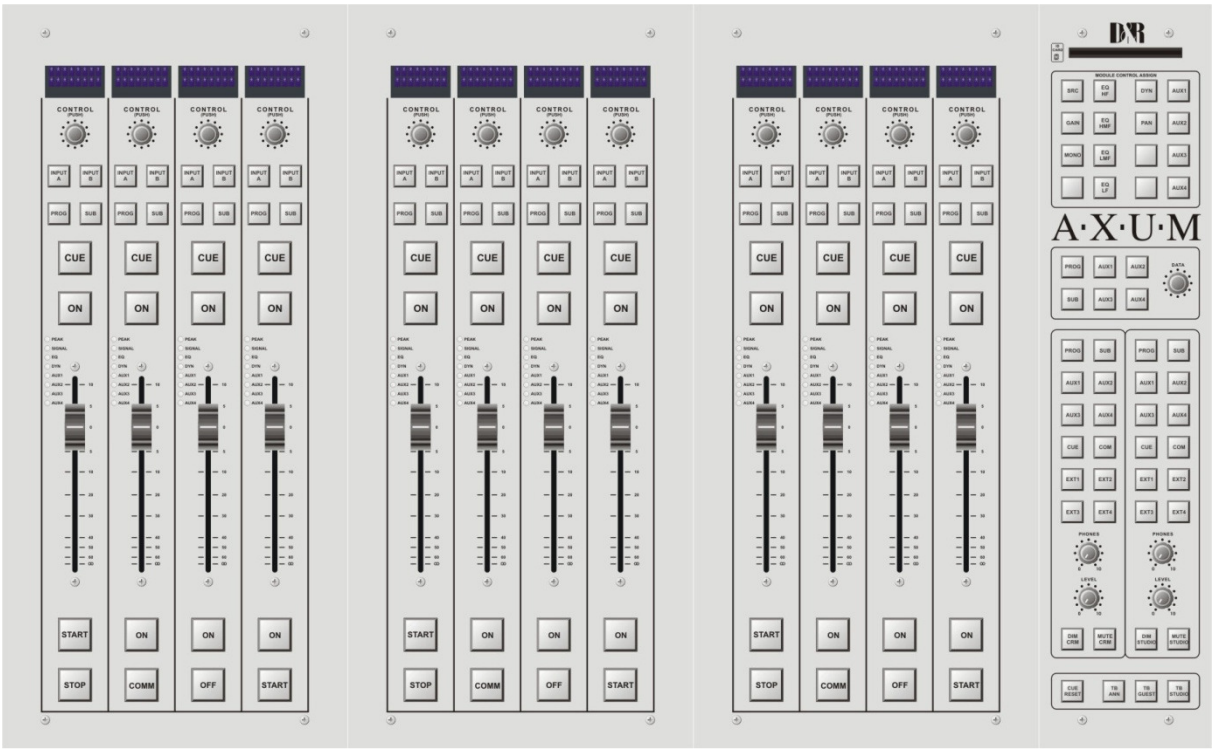


Figure 3: 12 fader control surface

This control surface holds 4 user interfaces nodes:

- 3x four fader panel node
- 1x monitor buss panel node

The 'four fader panel node' holds 84 objects:

- 4x Display upper line
- 4x Display lower line
- 4x Encoder
- 4x Encoder-push
- 32x LEDs
- 32x switches with LEDs (16 small, 16 large)
- 4x fader

The 'monitor buss panel node' holds 61 objects:

- 1 chip card
- 54 switches with LED's
- 1 encoder
- 1 encoder push
- 4 potentiometers

5 Oxygen 5 Digital Engine

The engine of the Oxygen 5 Digital drives all audio processing/routing and from the surfaces and remote locations, it can be controlled using MambaNet. Therefore it is required that you setup the engine/system with your settings before it will work according your requirements. Of course, we deliver the system in a default configuration that will cover 90% of the functionality you wish.

Setting up the engine (your mixing console) is done using your web browser.
Simply enter the IP address of the 19" rack in your browser and log-on to the configuration pages.

By default the IP Address is: **http://192.168.0.200**
(at first time startup you can use a network or cross wire with a static IP given to your network interface, e.g. 192.168.0.10).

On the Oxygen 5 Digital website, you find all necessary options to configure your system as full functioning mixing console(s), it's the most easy to step from up to down through the main menu:

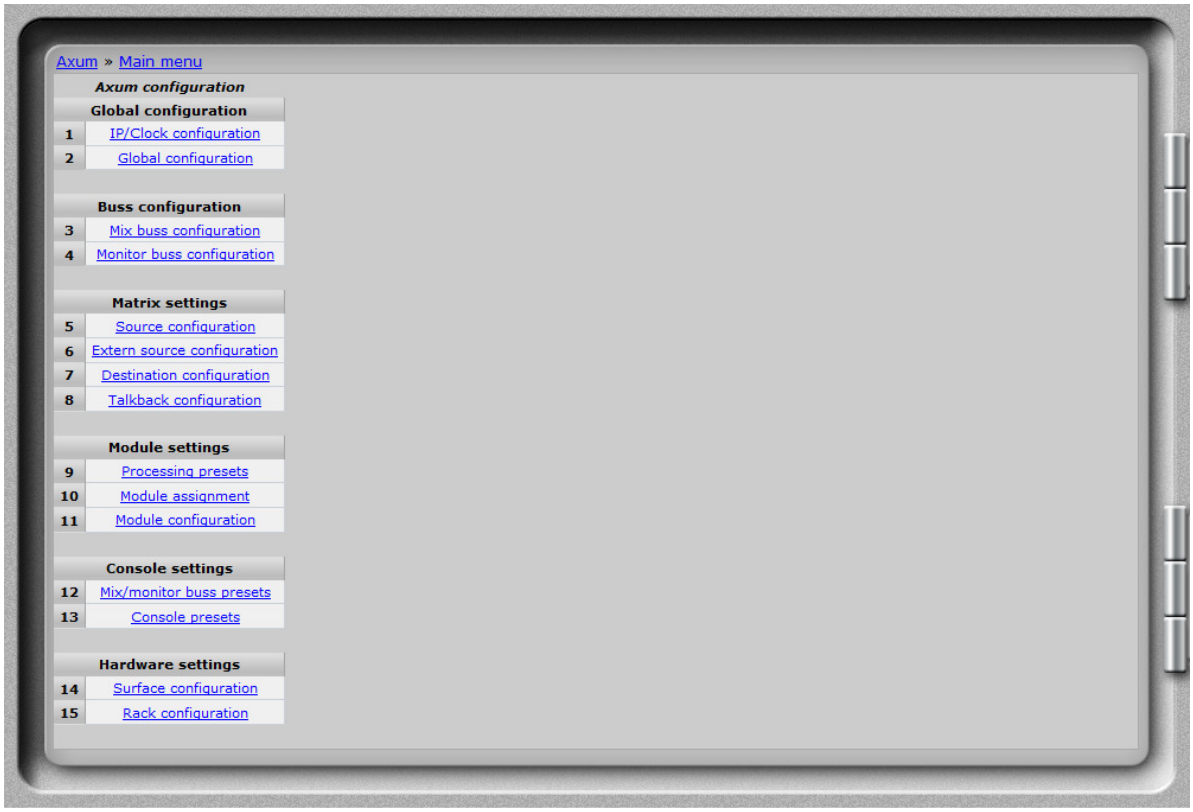


Figure 4: Oxygen 5 Digital web server

5.1 IP/Clock configuration

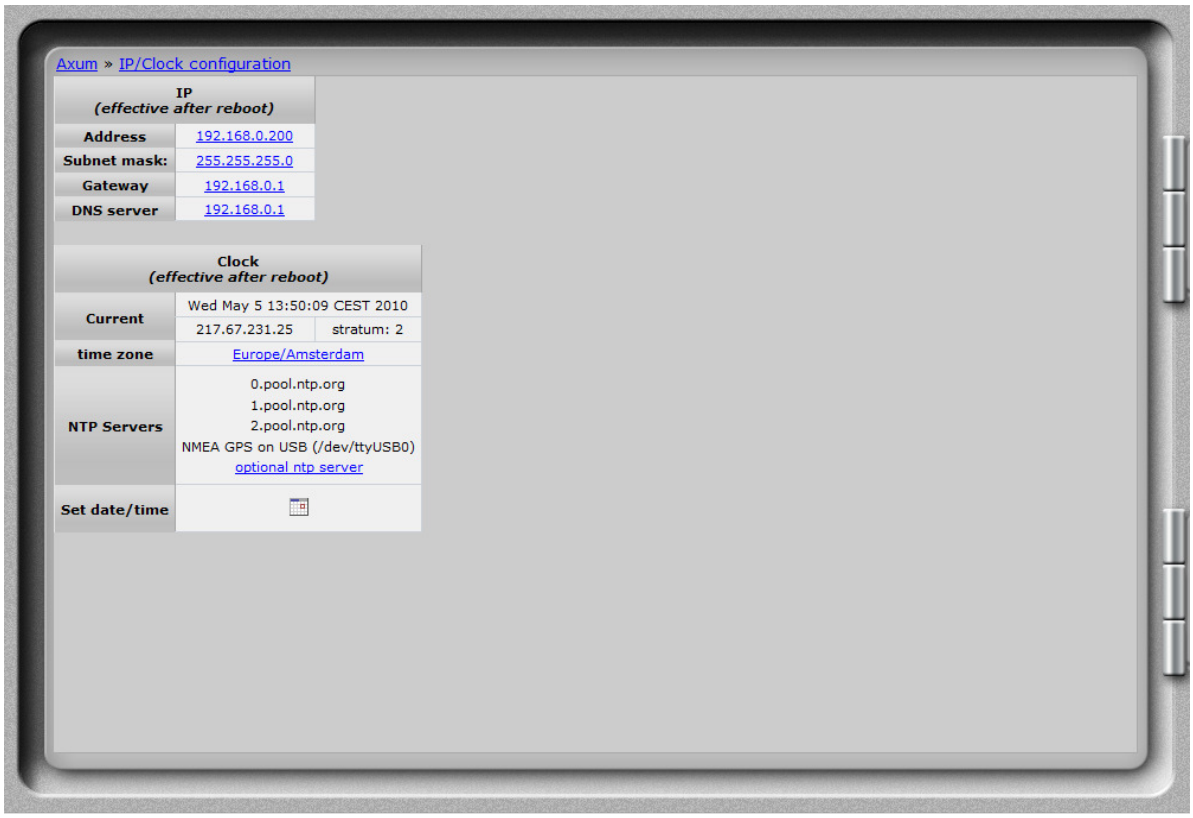


Figure 5: IP/Clock configuration

Here you can setup the network settings to be compatible with the required settings in your situation and you can set the time zone to where you are.

It's possible to change the IP, subnet, gateway and DNS server address by clicking on the address. For more information on IP addressing:
http://en.wikipedia.org/wiki/IP_address

To change the time zone, click on the used time zone (in our example 'Europe/Amsterdam'). You can select the desired time zone in the list box.

The Oxygen 5 Digital uses the NTP protocol for accurate clock synchronization. In the section 'current' you find the IP address of the used 'clock master' and its 'stratum'. For more information on NTP:
http://en.wikipedia.org/wiki/Network_Time_Protocol

When IP and DNS settings are setup correct, the Oxygen 5 Digital will automatically synchronize to a pool of time servers. The Oxygen 5 Digital is also able to use a GPS receiver via USB for time synchronization. At this moment to Oxygen 5 Digital may function if a NTP server for the surfaces.

On the webserver of the control surfaces you now can click on 'optional ntp server' to fill in the IP address of the ntp server (e.g. 192.168.0.200).

Remember that all changes will become effective after reboot.

5.2 Global configuration

Some overall system settings can be filled in on this webpage.

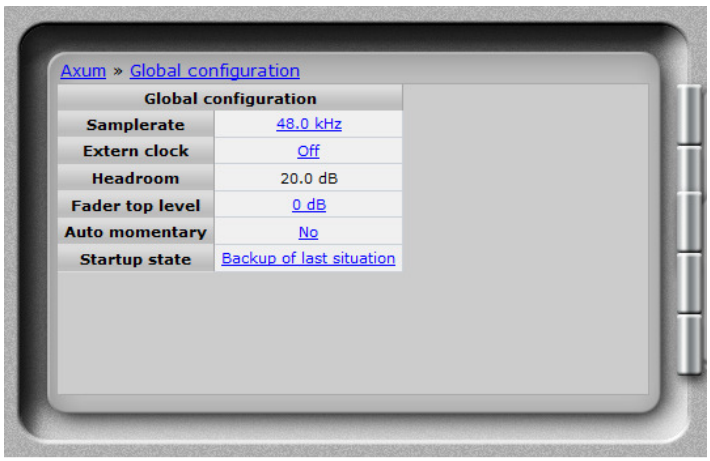


Figure 6: Global configuration

- **Sample rate**
  You can select a sample rate of 32 kHz, 44.1 kHz en 48kHz. According to this setting, the filters are setup so you have to make sure to select the sample rate you work with. Also when using external clock.

- **Extern(al) clock**
  If you want to use the external clock (Frame clock in) you can turn it on here.

- **Headroom**
  The internal headroom is fixed at 20 dB, to adjust the headroom on a local input/output you can give an offset level to the sources/destinations or at the rack configuration.

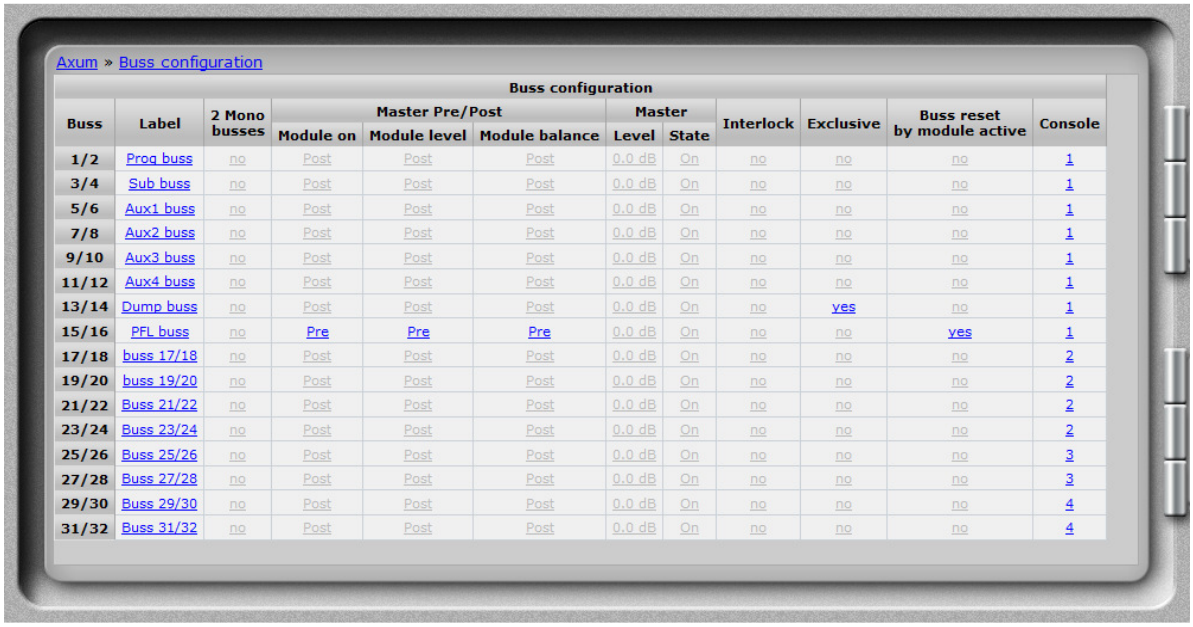
- **Fader top level**
  You can make the fader work with or without 10 dB fader reserve. In the last situation the faders will be 0 dB (unity gain) when the fader is fully up (maximum position).

- **Auto momentary**
  Most switch functions can work in a auto-momentary mode. When set to yes a knob will function latching when pressed shortly. But with a long press (>750 mS) the knob reacts like a momentary switch (function active while pressed).

- **Startup state**
  Here you can select to use a known startup state which is the 'programmed defaults' or use a 'backup of the last situation'.
  Programmed defaults are the defaults as setup in the web-configuration. An backup of the console is saved once a minute, which means you will return to (almost) the last situation.

5.3 Mix buss configuration

You have to setup the busses to create the names, console assignment and functionality of the Busses. Here we see the setup for a single console buss setup:



Axum » Buss configuration

Buss configuration

Buss	Label	2 Mono busses	Master Pre/Post			Master		Interlock	Exclusive	Buss reset by module active	Console
			Module on	Module level	Module balance	Level	State				
1/2	Prog buss	no	Post	Post	Post	0.0 dB	On	no	no	no	1
3/4	Sub buss	no	Post	Post	Post	0.0 dB	On	no	no	no	1
5/6	Aux1 buss	no	Post	Post	Post	0.0 dB	On	no	no	no	1
7/8	Aux2 buss	no	Post	Post	Post	0.0 dB	On	no	no	no	1
9/10	Aux3 buss	no	Post	Post	Post	0.0 dB	On	no	no	no	1
11/12	Aux4 buss	no	Post	Post	Post	0.0 dB	On	no	no	no	1
13/14	Dump buss	no	Post	Post	Post	0.0 dB	On	no	yes	no	1
15/16	PFL buss	no	Pre	Pre	Pre	0.0 dB	On	no	no	yes	1
17/18	buss 17/18	no	Post	Post	Post	0.0 dB	On	no	no	no	2
19/20	buss 19/20	no	Post	Post	Post	0.0 dB	On	no	no	no	2
21/22	Buss 21/22	no	Post	Post	Post	0.0 dB	On	no	no	no	2
23/24	Buss 23/24	no	Post	Post	Post	0.0 dB	On	no	no	no	2
25/26	Buss 25/26	no	Post	Post	Post	0.0 dB	On	no	no	no	3
27/28	Buss 27/28	no	Post	Post	Post	0.0 dB	On	no	no	no	3
29/30	Buss 29/30	no	Post	Post	Post	0.0 dB	On	no	no	no	4
31/32	Buss 31/32	no	Post	Post	Post	0.0 dB	On	no	no	no	4

Figure 7: Buss configuration

- **Label**
  The name given to this buss.

- **2 Mono busses**
  It is possible to make 2 mono busses from one stereo buss. All buss-sends, to this buss, on the module's will now include stereo to mono summing.

- **Master pre/post**
  You can choose the buss to be pre or post **ON**, **level** (comparable with pre/post fader) and **balance** (could be your pan-pot).

- **Master level/state**
  This setting is used as programmed startup level, so the buss masters are in a known state.

- **Interlock**
  If you make a buss interlock, only 1 module can be assigned at the same time.

- **Exclusive**
  When routing to an exclusive buss is made, the routing to all other busses on that module will be disabled. This is usefull for a so called 'dump buss'.

- **Buss reset**
  This setting can be used to create a CUE/PFL buss with auto-reset (CUE Reset).
  If you have multiple studios and CUE/PFL busses you may assign reset to multiple busses.

- **Console**
  You can select to which console a buss belongs.

5.4 Monitor buss configuration

Per DSP card, you have 4 stereo monitor busses that can be used. They need a name, console assignment and configuration so they can work properly:

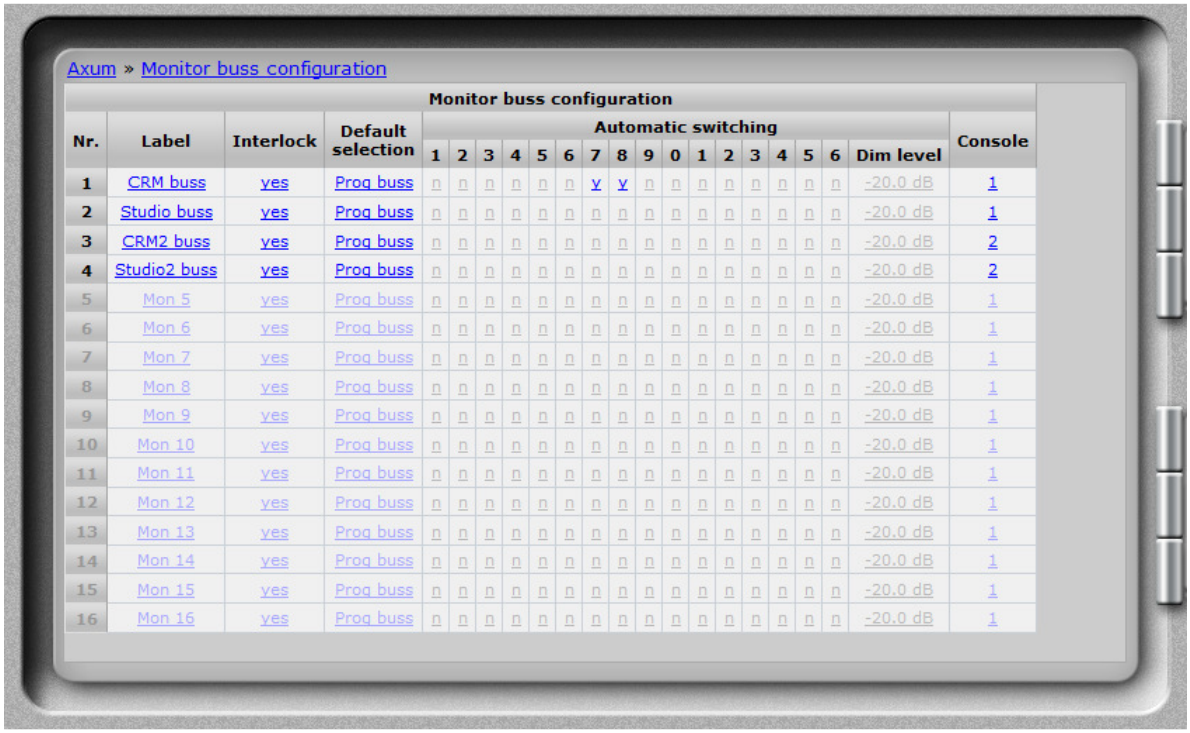

Axum » Monitor buss configuration
Monitor buss configuration
Nr. Label Interlock Default selection Automatic switching 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 Dim level Console
1 CRM buss yes Prog buss n n n n n n y y n n n n n n n n -20.0 dB 1
2 Studio buss yes Prog buss n n n n n n n n n n n n n n n n -20.0 dB 1
3 CRM2 buss yes Prog buss n n n n n n n n n n n n n n n n -20.0 dB 2
4 Studio2 buss yes Prog buss n n n n n n n n n n n n n n n n -20.0 dB 2
5 Mon 5 yes Prog buss n n n n n n n n n n n n n n n n -20.0 dB 1
6 Mon 6 yes Prog buss n n n n n n n n n n n n n n n n -20.0 dB 1
7 Mon 7 yes Prog buss n n n n n n n n n n n n n n n n -20.0 dB 1
8 Mon 8 yes Prog buss n n n n n n n n n n n n n n n n -20.0 dB 1
9 Mon 9 yes Prog buss n n n n n n n n n n n n n n n n -20.0 dB 1
10 Mon 10 yes Prog buss n n n n n n n n n n n n n n n n -20.0 dB 1
11 Mon 11 yes Prog buss n n n n n n n n n n n n n n n n -20.0 dB 1
12 Mon 12 yes Prog buss n n n n n n n n n n n n n n n n -20.0 dB 1
13 Mon 13 yes Prog buss n n n n n n n n n n n n n n n n -20.0 dB 1
14 Mon 14 yes Prog buss n n n n n n n n n n n n n n n n -20.0 dB 1
15 Mon 15 yes Prog buss n n n n n n n n n n n n n n n n -20.0 dB 1
16 Mon 16 yes Prog buss n n n n n n n n n n n n n n n n -20.0 dB 1

Figure 8: Monitor buss configuration

- **Label**
  Here you give a name to this monitor buss

- **Interlock**
  Yes means only one source is active at the same time, on this monitor buss.

- **Default selection**
  If the last selected source is turned off it will always go to the default selection.
  This selection is also your startup default.

- **Automatic switching**.
  You can tell the Engine that a monitor buss switches automatically when the 'source buss' is activated. Also known as 'PFL to CRM'. If you have two separate studios' you can have multiple automatically switched busses (e.g. PFL 1 and PFL 2).
  When to mix buss is an exclusive buss, the monitor buss will also switch 'exclusive'; normally automatic switching will be summing with the set up 'Dim level'.

- **Dim level**
  When you have set the monitor buss to switch automatically, the source signal is dimmed by the filled in level and the buss that is switched on to the Monitor buss is at unity gain (0 dB).

- **Console**
  You can select to which console a monitor buss belongs.

5.5 Source configuration

The 19" rack unit can accept various I/O cards. These inserted I/O cards can accept audio in various formats. This is because the audio connected to the I/O cards can have different channel relations (mono, stereo). To create a user readable label you have to configure sources.
Such a source is the entity you can select to be the input of your module in the mixing console.
See below for a simple source list example:

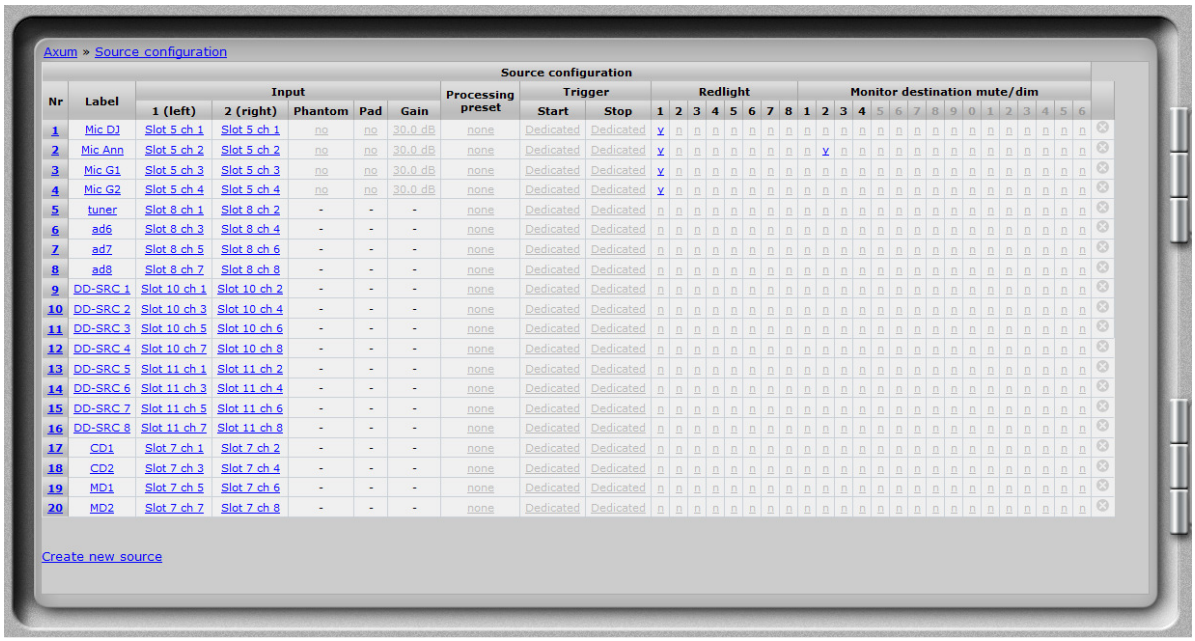


Figure 9: Source configuration

- **Nr**
  Here you can reposition the destination to make the list in a convenient order.

- **Label**
  Name of the source you are creating.

- **Input 1/2**
  Here you select the physical slot and input of the card you want to assign to this source.
  For mono sources you selected the same input for left and right.

- **Phantom**
  The phantom power for this source is turned on/off at startup.
  (this field is only available when the source-phantom function is also assigned to an object; e.g. via rack configuration)

- **Pad**
  The PAD for this source is turned on/off at startup.
  (this field is only available when the source-phantom function is also assigned to an object; e.g. via rack configuration)

- **Gain**
  The source gain for this source is at startup set to this level.
  (this field is only available when the source-phantom function is also assigned to an object; e.g. via rack configuration)

- **Processing preset**
  If this source is selected on a module, by the 'source select' function (not via module or

console preset), this processing preset is 'set' on the module.

- **Trigger start**
  Here you can configure how the source start/stop change is triggered:
  - Dedicated, the module fader and on are not triggering start/stop only the dedicated start/stop controllers.
  - Module fader on, the fader on will trigger the start as well.
  - Module on, the on switch will trigger the start as well.
  - Module fader on & on, the fader must be open and on active then the start is triggered.

  For all modes the start/stop may at the same time controlled by the dedicated controllers

- **Trigger stop**
  Here you can configure how the source start/stop change is triggered:
  - Dedicated, the module fader and on are not triggering start/stop only the dedicated start/stop controllers.
  - Module fader off, the fader off will trigger the stop as well.
  - Module off, the on switch will trigger the stop as well.
  - Module fader off & off, the fader must be closed or on inactive then the stop is triggered.

  For all modes the start/stop may at the same time controlled by the dedicated controllers

- **Red-light.**
  When this source becomes active on a module, the corresponding Red-light buss becomes active.

- **Monitor destination mute**
  When this source becomes active on a module, the corresponding monitor buss will be muted.

- **Delete**
  When you click on this column the source will be deleted (and also all references are deleted).

- **Create a new source**
  By clicking on this link a popup will appear where you have to setup the physical inputs and label for the new source.

5.6 Extern source configuration

Each DSP card can handle four stereo monitor busses (with 4 DSP cards a max of 16 stereo monitor busses is possible). For each DSP card you can configure 8 external stereo sources, beyond the 16 stereo mixing busses which are fixed available in the monitor section.

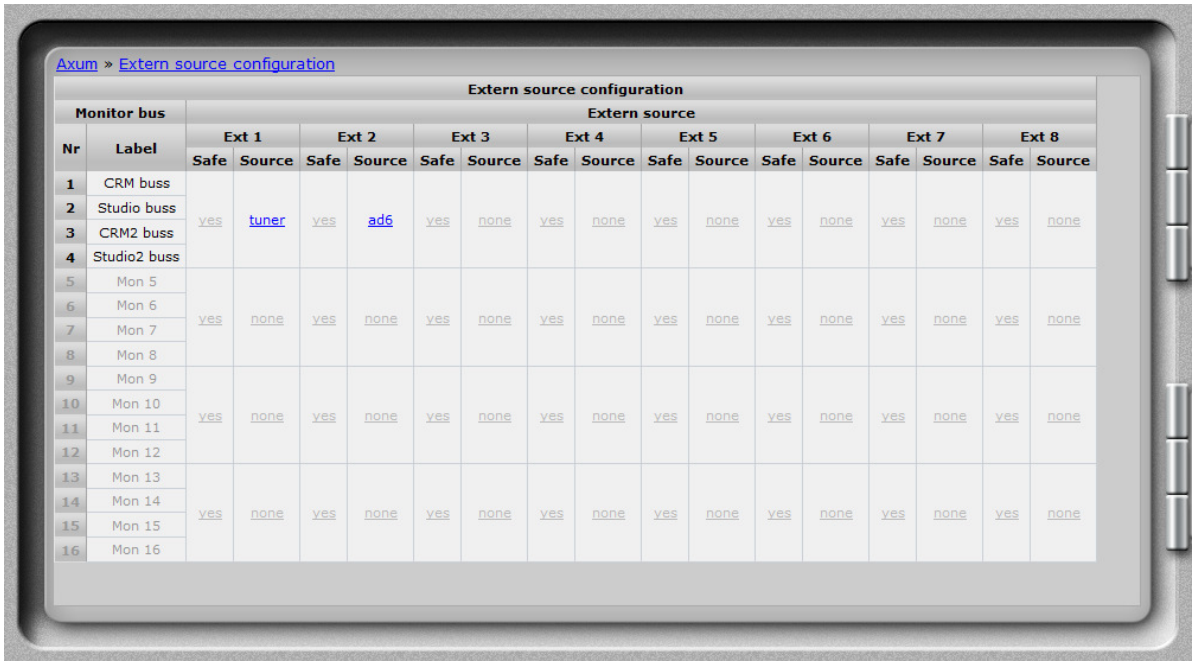


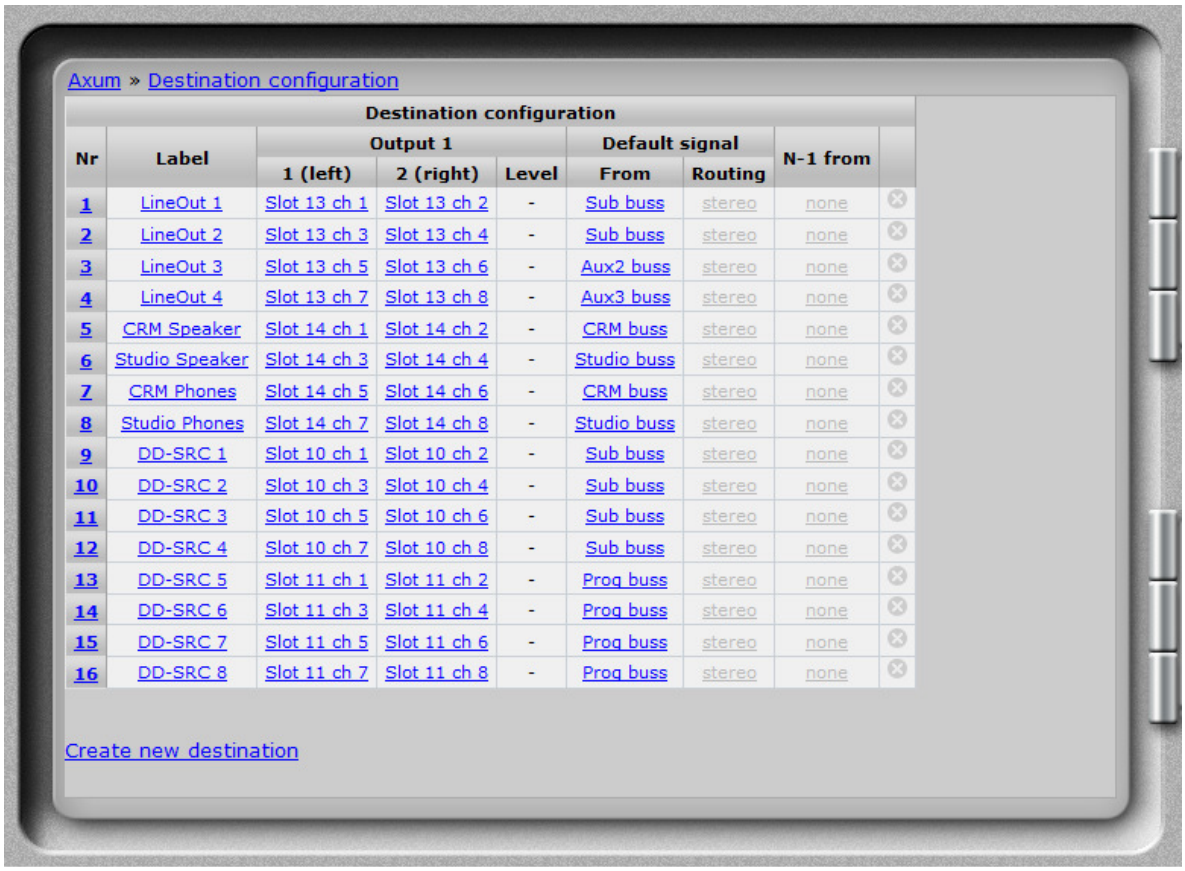
Figure 10: External source configuration

- **Safe**
  Extern source can be configured to be 'interlock safe'.
  Normally only one buss or external input can be active on the monitor buss if configured to be 'interlock'. But sometimes it is important your signal will not disappear if another CRM-source is selected, in that case you can set the external source to be 'safe'.

- **Source**
  Here you can select which signal routes to this 'external input'.
  You can choose:
  - Input sources (Mic, line, dig etc. etc.)
  - Mix busses
  - Monitor busses
  - Insert outs (of modules)
  - N-1 signals (for a single module)

5.7 Destination configuration

The 19" rack unit can accept various I/O cards. With these cards, you can send audio from the Oxygen 5 Digital digital audio system to the audio format you require. Because the audio connected to the I/O cards can have different channel relations (mono, stereo) a combination has to be made. A user readable label has to be created to configure destinations. Such destination is the entity you can select to be the output of a mixing buss of the mixing console. See an example destination list:



Nr	Label	Output 1			Default signal		N-1 from	
		1 (left)	2 (right)	Level	From	Routing		
1	LineOut 1	Slot 13 ch 1	Slot 13 ch 2	-	Sub buss	stereo	none	
2	LineOut 2	Slot 13 ch 3	Slot 13 ch 4	-	Sub buss	stereo	none	
3	LineOut 3	Slot 13 ch 5	Slot 13 ch 6	-	Aux2 buss	stereo	none	
4	LineOut 4	Slot 13 ch 7	Slot 13 ch 8	-	Aux3 buss	stereo	none	
5	CRM Speaker	Slot 14 ch 1	Slot 14 ch 2	-	CRM buss	stereo	none	
6	Studio Speaker	Slot 14 ch 3	Slot 14 ch 4	-	Studio buss	stereo	none	
7	CRM Phones	Slot 14 ch 5	Slot 14 ch 6	-	CRM buss	stereo	none	
8	Studio Phones	Slot 14 ch 7	Slot 14 ch 8	-	Studio buss	stereo	none	
9	DD-SRC 1	Slot 10 ch 1	Slot 10 ch 2	-	Sub buss	stereo	none	
10	DD-SRC 2	Slot 10 ch 3	Slot 10 ch 4	-	Sub buss	stereo	none	
11	DD-SRC 3	Slot 10 ch 5	Slot 10 ch 6	-	Sub buss	stereo	none	
12	DD-SRC 4	Slot 10 ch 7	Slot 10 ch 8	-	Sub buss	stereo	none	
13	DD-SRC 5	Slot 11 ch 1	Slot 11 ch 2	-	Prog buss	stereo	none	
14	DD-SRC 6	Slot 11 ch 3	Slot 11 ch 4	-	Prog buss	stereo	none	
15	DD-SRC 7	Slot 11 ch 5	Slot 11 ch 6	-	Prog buss	stereo	none	
16	DD-SRC 8	Slot 11 ch 7	Slot 11 ch 8	-	Prog buss	stereo	none	

Figure 11: Destination configuration

- **Nr**
  Here you can reposition the destination to make the list in a convenient order.

- **Label**
  Name of the destination you are setting up.

- **Output 1/2**
  Here you select the physical slot and output of the card you want to assign to this destination. For a mono output you have to select only one of the left or right outputs to a physical slot/ch.

- **Level**
  The destination level for this source is at startup set to this level; for example to adjust headroom for a single output.
  (this field is only available when the destination-level function is also assigned to an object; e.g. via rack configuration)

- **Default signal from**
  This destination/output will send audio from the default selected source (except if a N-1 is active, then automatically the N-1 signal is selected).
  You can choose:

- Input sources (Mic, line, dig etc. etc.)
- Mix busses
- Monitor busses
- Insert outs (of modules)

- **Default signal routing**
  Here you can choose which signal feeds the physical outputs:
  Stereo (if no mix minus source is assigned):
  Output left and right received their corresponding signal
  Left:
  Output left and right both receive the left signal.
  Right:
  Output left and right both receive the right signal.
  Mono (only if a mix minus source is assigned):
  The mix minus signal is always a mono signal.

- **N-1 from/mix minus source**
  When the selected source is assigned to a module, this destination automatically creates an N-1 using the selected source.

- **Delete**
  When you click on this column the destination will be deleted (and also all references are deleted).

- **Create a new destination**
  By clicking on this link a popup will appear where you have to setup the physical outputs and label for the new destination. When you select the same output for both channels, the system will use it on the left output and set the right to none.

5.8 Talkback configuration

This pages makes it possible to select the sources for the 16 talkback busses available in the Oxygen 5 Digital.

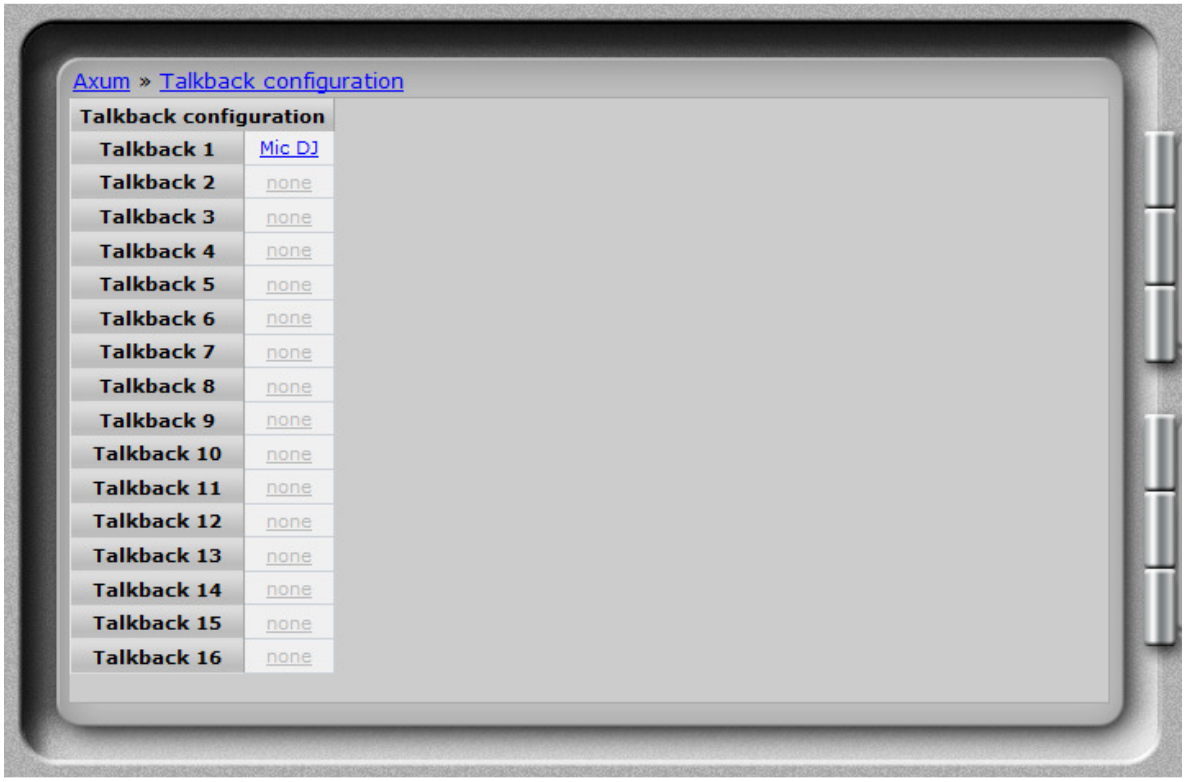


Figure 12: Talkback configuration

- **Source**
  Here you can select which signal routes to a talkback buss.
  You can choose:
  - Input sources (Mic, line, dig etc. etc.)
  - Mix busses
  - Monitor busses
  - Insert outs (of modules)
  - N-1 signals (for a single module)

5.9 Processing presets

It is possible to set the module processing when a source is selected (via 'source select' or a module preset) , the information for this functionality is stored in the processing presets.

Axum » Processing presets
Processing preset
Nr
Label
Settings
1 DJ Sybren Configure »Copy to new preset
2 DJ Tim Configure »Copy to new preset
3 DJ Niek Configure »Copy to new preset
4 DJ Yoran Configure »Copy to new preset
5 Guest Default Configure »Copy to new preset
6 No Eq Configure »Copy to new preset
7 Little Eq Configure »Copy to new preset
8 Hybrid Configure »Copy to new preset
Create new preset

Figure 13: Processing presets

- **Nr**
  Here you can reposition the preset to make the list in a convenient order.

- **Label**
  Name of the preset.

- **Settings.**
  Shows a new page where you can configure the preset.

- **Delete**
  When you click on this column the preset will be deleted (and also all references are deleted).

- **Copy to new preset**
  This function can be used to get the current settings copied in a new preset.
  A popup will appear where you have to setup the label for the new preset.

- **Create new preset**
  By clicking on this link a popup will appear where you have to setup the label for the new preset.

5.9.1 Settings

All processing parameters can be configured in the processing preset settings webpage

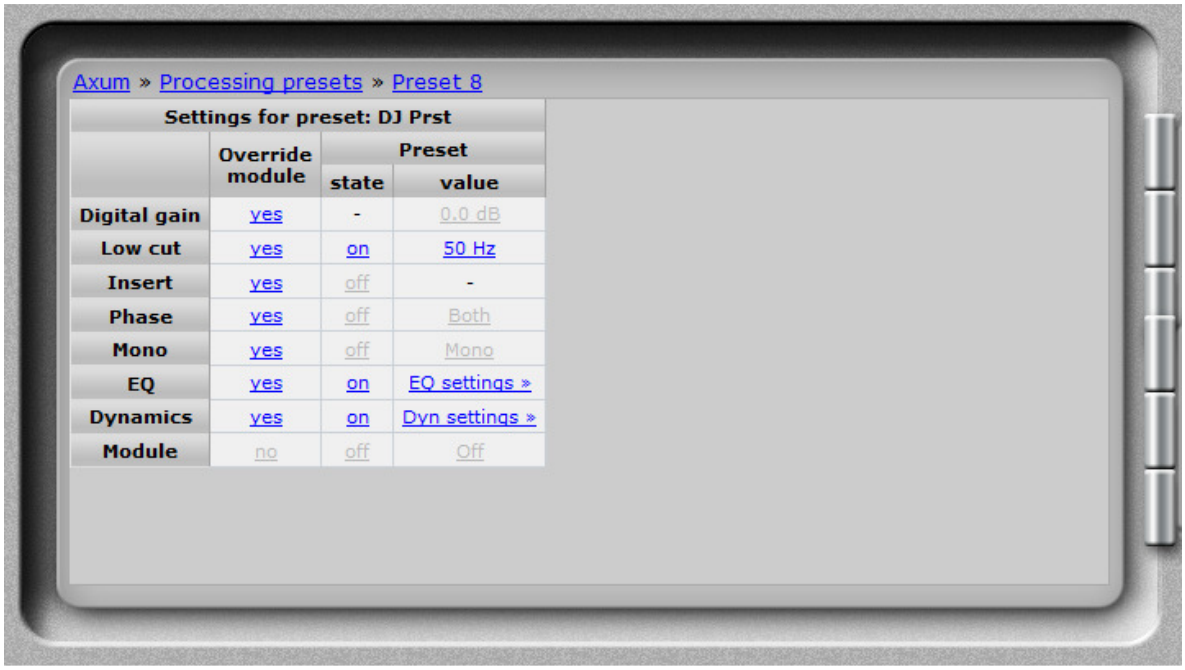


Figure 14: Processing preset settings

- **Override module**
  If set to no, the module setting will not be affected by this preset.
  If set to yes, this preset will change the settings of the module for the corresponding processing section (Digital gain, Low cut etc. etc.)

- **State**
  if the override is turned to yes, you can set the processing section to 'on' or 'off'.
  for example:
  - Microphones will often have the state EQ on
  - CD players will often have the state EQ off

- **Value**
  if the override is turned to yes, this value is set for the corresponding processing section.
  For EQ and dynamics, a popup window is shown. Here you can set multiple values.

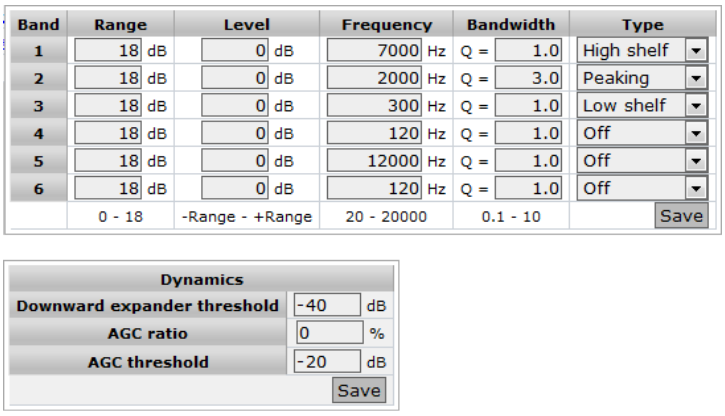

Band
Range
Level
Frequency
Bandwidth
Type
1 18 dB 0 dB 7000 Hz Q = 1.0 High shelf
2 18 dB 0 dB 2000 Hz Q = 3.0 Peaking
3 18 dB 0 dB 300 Hz Q = 1.0 Low shelf
4 18 dB 0 dB 120 Hz Q = 1.0 Off
5 18 dB 0 dB 12000 Hz Q = 1.0 Off
6 18 dB 0 dB 120 Hz Q = 1.0 Off
0 - 18
-Range - +Range
20 - 20000
0.1 - 10
Save
Dynamics
Downward expander threshold -40 dB
AGC ratio 0 %
AGC threshold -20 dB
Save

Figure 15: Processing preset EQ/Dynamics settings

EQ Range
Maximal adjustment you may generate with this band.

EQ Level
Level of the band that this preset will set.
The value must be within the EQ Range

EQ Frequency
Frequency of the band that this preset will set.
The frequency range is 20-20000 Hz.

EQ Bandwidth
Bandwidth of the band that this preset will set.
The bandwidth range is 0.1 – 10

EQ type
Type of the band that this preset will set.
You can choose:
- Off
- High pass filter (6 dB/Oct)
- Low shelf
- Peaking (is the normal EQ curve)
- High shelf
- Low pass filter
- Band pass filter
- notch filter

Downward expander threshold

Threshold of the downward expander (to reduce ambient sound) that this preset will set.
The threshold range is -50 dB till 0 dB.

AGC ratio
The ratio for this automatic gain control is given in 0-100%.

AGC threshold
Threshold of the AGC, above the threshold the AGC tries to hold the signal 0 dB.
the threshold range is -30 till 0 dB.
(Be aware with a low threshold, you may generate a lot of gain)

5.10 Module assignment

Modules can be assigned to one of the 4 consoles, after this and a correct assignment of the busses to the consoles you may click 'generate' to make a correct assignment configuration.
Afterwards you can override the generate assignments by clicking the 'y'/'n' fields. For example you can create a buss that is available to all consoles.

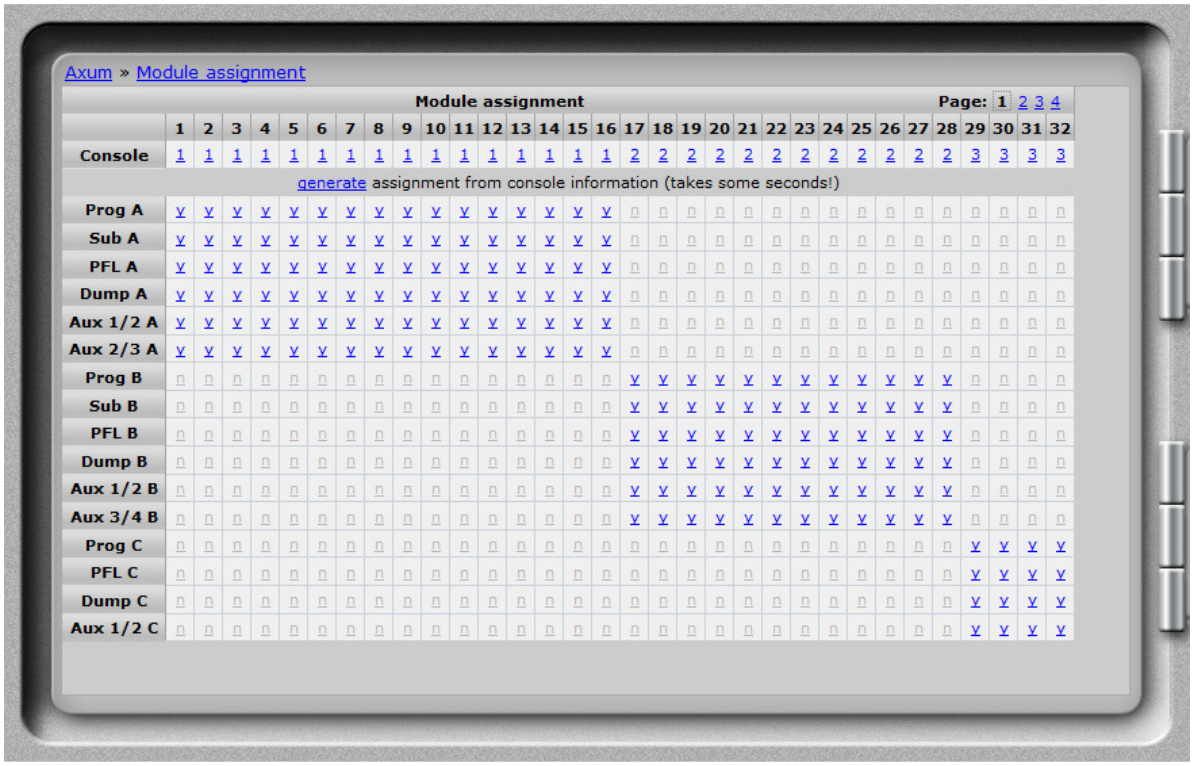

Axum » Module assignment
Module assignment
Page: 1 2 3 4
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32
Console
generate assignment from console information (takes some seconds!)
Prog A
Sub A
PFL A
Dump A
Aux 1/2 A
Aux 2/3 A
Prog B
Sub B
PFL B
Dump B
Aux 1/2 B
Aux 3/4 B
Prog C
PFL C
Dump C
Aux 1/2 C

Figure 16: Module assignment

5.11 Module configuration

The module configuration makes it possible to give modules a default setting (after powering on) and you can also configure module presets 1A/1B, 2A/2B, 3A/3B, 4A/4B.

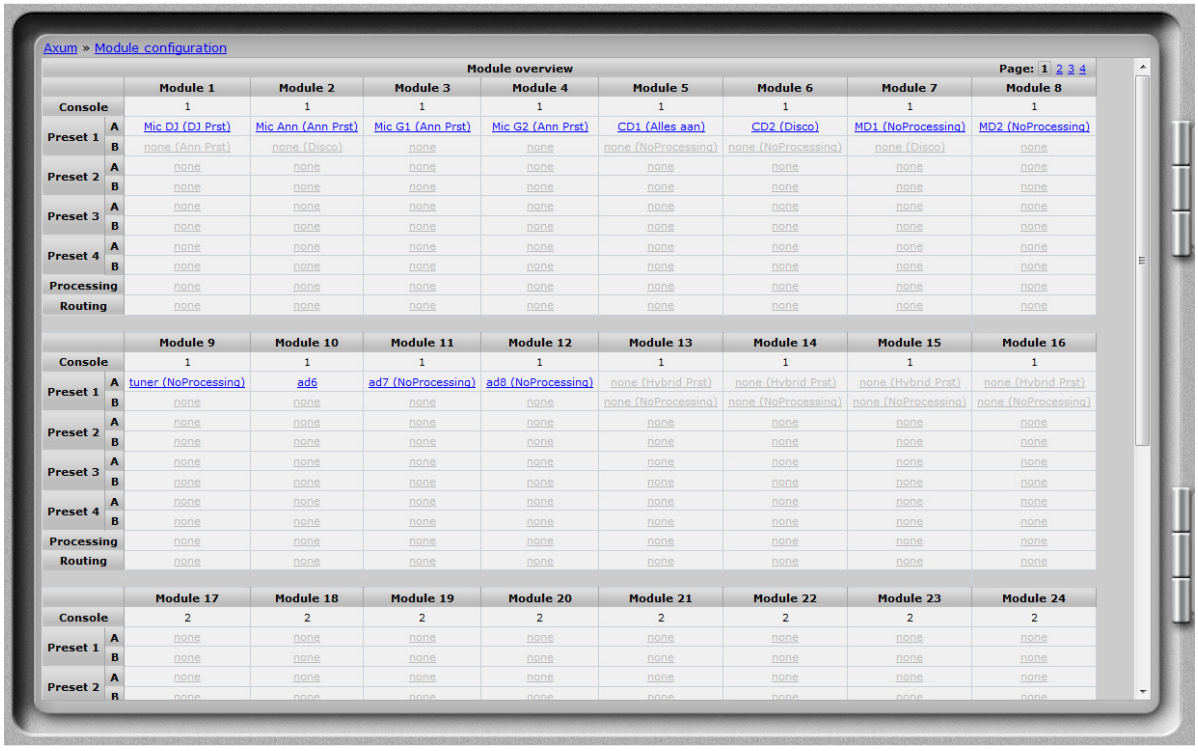

Axum » Module configuration
Module overview
Page: 1 2 3 4
Module 1 Module 2 Module 3 Module 4 Module 5 Module 6 Module 7 Module 8
Console 1 1 1 1 1 1 1 1
Preset 1 A Mic DJ (DJ Prst) Mic Ann (Ann Prst) Mic G1 (Ann Prst) Mic G2 (Ann Prst) CD1 (Alles aan) CD2 (Disco) MD1 (NoProcessing) MD2 (NoProcessing)
Preset 1 B none (Ann Prst) none (Disco) none none none (NoProcessing) none (NoProcessing) none (Disco) none
Preset 2 A none none none none none none none none
Preset 2 B none none none none none none none none
Preset 3 A none none none none none none none none
Preset 3 B none none none none none none none none
Preset 4 A none none none none none none none none
Preset 4 B none none none none none none none none
Processing none none none none none none none none
Routing none none none none none none none none
Module 9 Module 10 Module 11 Module 12 Module 13 Module 14 Module 15 Module 16
Console 1 1 1 1 1 1 1 1
Preset 1 A tuner (NoProcessing) ad6 ad7 (NoProcessing) ad8 (NoProcessing) none (Hybrid Prst) none (Hybrid Prst) none (Hybrid Prst) none (Hybrid Prst)
Preset 1 B none none none none none (NoProcessing) none (NoProcessing) none (NoProcessing) none (NoProcessing)
Preset 2 A none none none none none none none none
Preset 2 B none none none none none none none none
Preset 3 A none none none none none none none none
Preset 3 B none none none none none none none none
Preset 4 A none none none none none none none none
Preset 4 B none none none none none none none none
Processing none none none none none none none none
Routing none none none none none none none none
Module 17 Module 18 Module 19 Module 20 Module 21 Module 22 Module 23 Module 24
Console 2 2 2 2 2 2 2 2
Preset 1 A none none none none none none none none
Preset 1 B none none none none none none none none
Preset 2 A none none none none none none none none

Figure 17: Input module configuration

- **Console**
  Shows to which console the module is assigned.

- **Preset 1A/1B, 2A/2B, 3A/3B, 4A/4B**
  Shows the source and processing preset selected for corresponding module preset. If the '#' symbol appears there is an active routing preset.
  (click on the link to go to the configuration page for the module)

- **Processing**
  Here you can see if there is any processing done.
  (click on the link to go to the configuration page for the module)

- **Routing**
  (click on the link to go to the configuration page for the module)

5.11.1 Module configuration page

On this page you can setup the default module configuration, used at startup if programmed default. If you have made your settings and you would like to copy them to all modules in this console (for example if you want to use the same EQ center frequencies) you can simply hit 'To all console x modules' after you made and checked the settings on the current module.

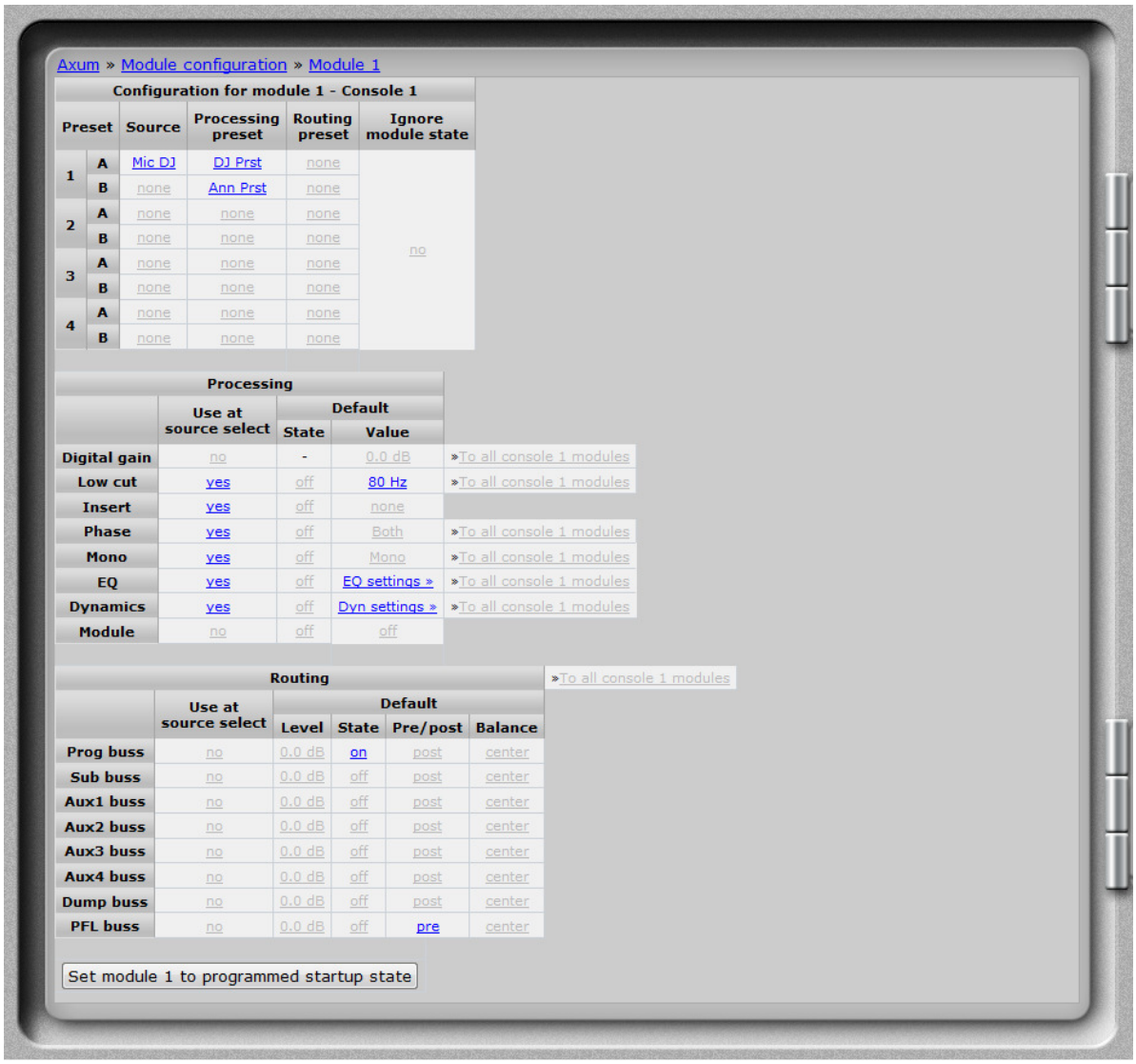

Axum » Module configuration » Module 1
Configuration for module 1 - Console 1
Preset
Source
Processing preset
Routing preset
Ignore module state
1 A Mic DJ DJ Prst none
B none Ann Prst none
2 A none none none
B none none none
3 A none none none
B none none none
4 A none none none
B none none none
no
Processing
Use at source select
Default
State
Value
Digital gain no - 0.0 dB »To all console 1 modules
Low cut yes off 80 Hz »To all console 1 modules
Insert yes off none
Phase yes off Both »To all console 1 modules
Mono yes off Mono »To all console 1 modules
EQ yes off EQ settings » »To all console 1 modules
Dynamics yes off Dyn settings » »To all console 1 modules
Module no off off
Routing
»To all console 1 modules
Use at source select
Default
Level
State
Pre/post
Balance
Prog buss no 0.0 dB on post center
Sub buss no 0.0 dB off post center
Aux1 buss no 0.0 dB off post center
Aux2 buss no 0.0 dB off post center
Aux3 buss no 0.0 dB off post center
Aux4 buss no 0.0 dB off post center
Dump buss no 0.0 dB off post center
PFL buss no 0.0 dB off pre center
Set module 1 to programmed startup state

Figure 18: Module configuration page

5.11.1.1 Module preset 1A/1B, 2A/2B, 3A/3B, 4A/4B

Here you select the source, processing preset and routing preset that is used when module preset 1A/1B, 2A/2B, 3A/3B, 4A/4B is selected. After a click on 'routing' a popup appears with the routing possibilities (this depends on the console assignment).

- **Routing Preset**

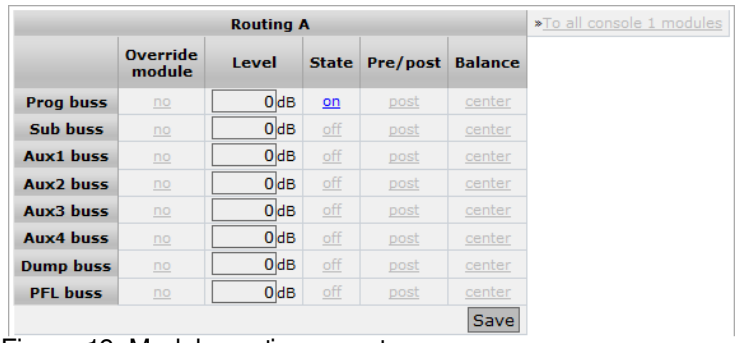


Figure 19: Module routing preset

Override module
If set to no, the module setting will not be affected by this preset. If set to yes, this preset will change the settings of the module for the corresponding buss.

Level
If the override is turned to yes, this will set the send level to the buss for this module when current preset is selected.

State
If the override is turned to yes, this will set the buss state to 'on' or 'off' for this module when this module preset is select.

Pre/Post
If the override is turned to yes, this will set the buss pre or post for this module when this module preset is select.

Balance
If the override is turned to yes, this will set the buss balance for this module when this module preset is select.

To all console 1-4 module
With this link you can copy the current settings to the same routing preset (1A/1B, 2A/2B, 3A/3B, 4A/4B) at all modules of the console where this module is assigned to.

- **Ignore module state**
  When presets are recalled, it checks the module state to prevent recalling 'onair' signals. The preset will wait till the module is switched off air.
  If the ignore module state function is switched to yes, the presets will not check the module state and forces the recall to be done always!

5.11.1.2 Processing

This are the programmed processing defaults for the modules. Depending on the startup settings these processing defaults will be used at startup.

The field 'Use at source select' determines if the processing section also is used when there is no processing preset assigned to the source/module preset, or the processing section in the processing preset is not overriding the module settings.

The following processing sections are available:

- **Digital Gain level**
  You can enter a default gain level for each module.
- **Low cut frequency**
  You can enter a default frequency of the low cut filter.
- **Phase**
  Set the phase to default settings.
- **Mono**
  Give the mono settings default values.
- **EQ**
  By clicking on EQ you can set the default equalizer settings.
- **Dynamics**
  This setting is used as default
- **Module level**
  Set the level to default value at startup.
- **Module state**
  Set the module to on or off at startup.

5.11.1.3 Routing

- **Buss level**
  You may predefine the send level of a module to the busses (e.g. Aux send).
- **Buss status**
  You have to setup the startup status for the busses. With this setting you set the buss routing (e.g. Program on/off or CUE on/off).
- **Buss Pre/Post**
  It's possible to have pre/post selection per module, the startup setting can be configured here.
- **Balance**
  You can select the balance of the buss sent.

5.12 Mix/monitor buss presets

It is possible to make mix/monitor buss presets to make sure for different programs the correct buss master states and levels are set. Also you can make sure the required monitor buss selection is made.

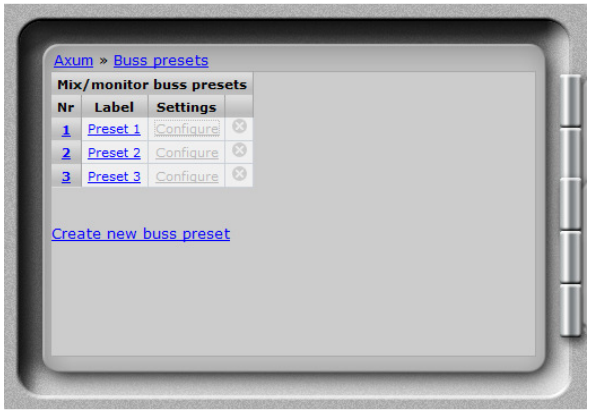


Figure 20: Mix/monitor buss presets

- **Nr**
  Here you can reposition the preset to make the list in a convenient order.

- **Label**
  Name of the preset.

- **Settings.**
  Shows a new page where you can configure the preset.

- **Delete**
  When you click on this column the preset will be deleted (and also all references are deleted).

- **Create new buss preset**
  By clicking on this link a popup will appear where you have to setup the label for the new preset.

5.12.1 Settings

On this page you can set the required levels and state for all busses and monitor busses which are used in the mix/monitor buss preset.

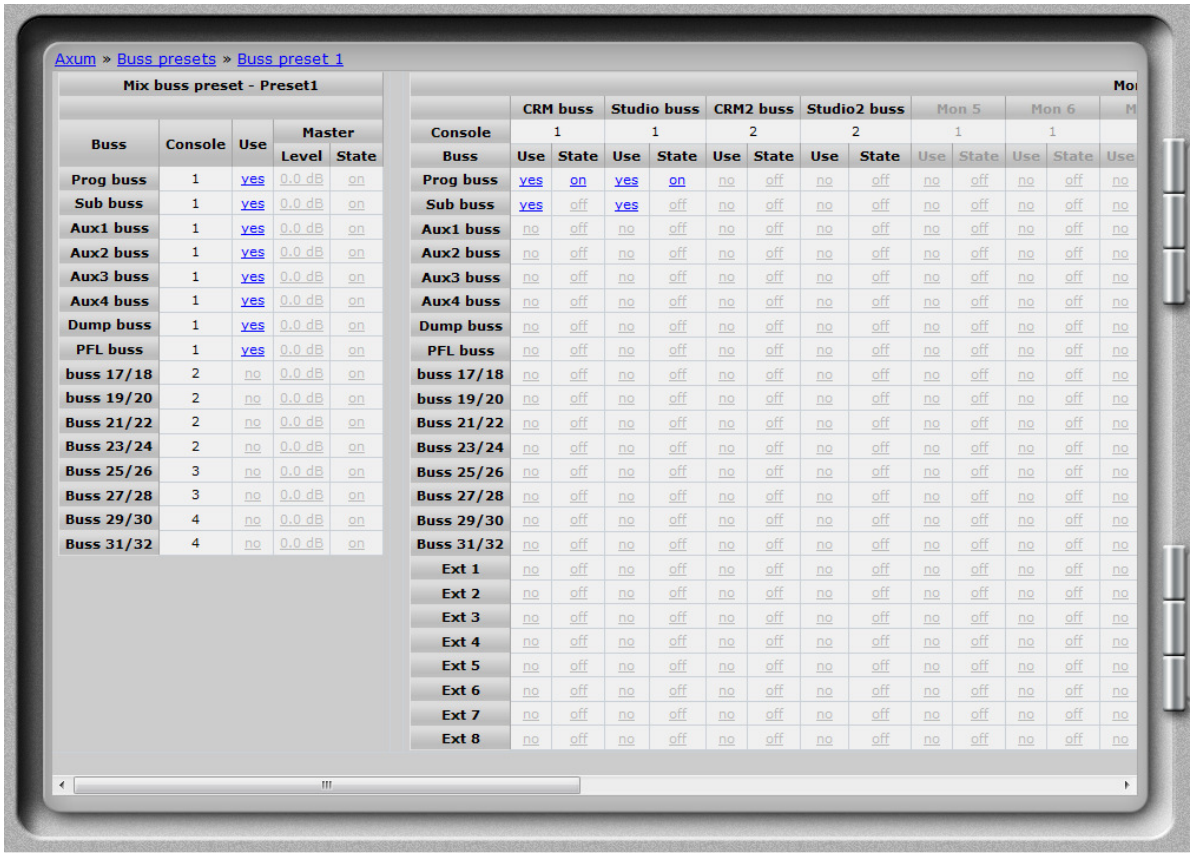

Axum » Buss presets » Buss preset 1
Mix buss preset - Preset1
Buss | Console | Use | Master Level | Master State
Prog buss 1 yes 0.0 dB on
Sub buss 1 yes 0.0 dB on
Aux1 buss 1 yes 0.0 dB on
Aux2 buss 1 yes 0.0 dB on
Aux3 buss 1 yes 0.0 dB on
Aux4 buss 1 yes 0.0 dB on
Dump buss 1 yes 0.0 dB on
PFL buss 1 yes 0.0 dB on
buss 17/18 2 no 0.0 dB on
buss 19/20 2 no 0.0 dB on
Buss 21/22 2 no 0.0 dB on
Buss 23/24 2 no 0.0 dB on
Buss 25/26 3 no 0.0 dB on
Buss 27/28 3 no 0.0 dB on
Buss 29/30 4 no 0.0 dB on
Buss 31/32 4 no 0.0 dB on
CRM buss | Studio buss | CRM2 buss | Studio2 buss | Mon 5 | Mon 6
Console 1 1 2 2 1 1
Buss | Use | State | Use | State | Use | State | Use | State | Use | State | Use | State
Prog buss yes on yes on no off no off no off no off no
Sub buss yes off yes off no off no off no off no off no
Aux1 buss no off no off no off no off no off no off no
Aux2 buss no off no off no off no off no off no off no
Aux3 buss no off no off no off no off no off no off no
Aux4 buss no off no off no off no off no off no off no
Dump buss no off no off no off no off no off no off no
PFL buss no off no off no off no off no off no off no
buss 17/18 no off no off no off no off no off no off no
buss 19/20 no off no off no off no off no off no off no
Buss 21/22 no off no off no off no off no off no off no
Buss 23/24 no off no off no off no off no off no off no
Buss 25/26 no off no off no off no off no off no off no
Buss 27/28 no off no off no off no off no off no off no
Buss 29/30 no off no off no off no off no off no off no
Buss 31/32 no off no off no off no off no off no off no
Ext 1 no off no off no off no off no off no off no
Ext 2 no off no off no off no off no off no off no
Ext 3 no off no off no off no off no off no off no
Ext 4 no off no off no off no off no off no off no
Ext 5 no off no off no off no off no off no off no
Ext 6 no off no off no off no off no off no off no
Ext 7 no off no off no off no off no off no off no
Ext 8 no off no off no off no off no off no off no

Figure 21: Mix/monitor buss preset settings

5.12.1.1 Mix buss settings

- **Console**
  Displays the console where this mix buss is assigned to.

- **Use**
  When set to 'yes' the settings for this mix buss overrides the current mix settings if the preset is loaded.

- **Master level**
  Here you can give the preset master level of the corresponding mix buss.

- **Master state**
  Here you can give the preset master state of the corresponding mix buss.

5.12.1.2 Monitor buss settings

- **Console**
  Displays the console where this monitor buss is assigned to.

- **Use**
  When set to 'yes' the settings for this monitor buss overrides the current monitor settings if the

preset is loaded.

- **State**
  This must be set to 'yes' if you want that this preset makes this monitor-buss routing.

5.13 Console presets

To recall a complete console you use the console presets, what exactly is recalled is depending on the underlying configuration of:

- Source configuration
- Processing presets
- Module configuration
- Mix/monitor buss presets

When a console preset is recalled it will set all modules to the module preset 'A'-'H' as configured. Secondly it will load the Mix/monitor preset as given in the console preset.

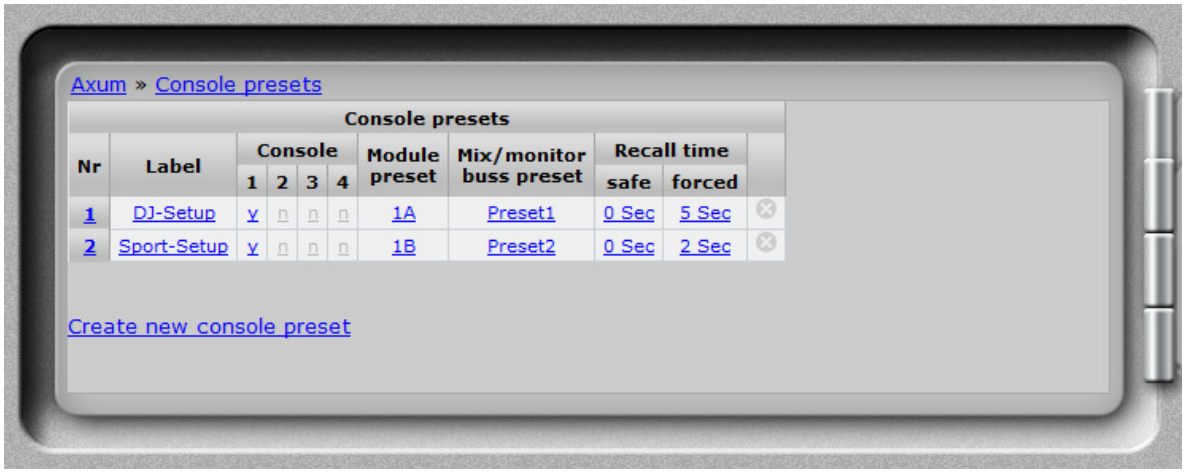


Figure 22: Console presets

- **Nr**
  Here you can reposition the preset to make the list in a convenient order.

- **Label**
  Name of the preset.

- **Console**
  Select to which console or consoles this preset is active.

- **Select module preset**
  Here you can select to use module preset 1A/1B, 2A/2B, 3A/3B, 4A/4B.

- **Mix/monitor buss preset**
  Here you can select on of the mix/monitor buss presets to use in this console preset.

- **Recall time**
  A console preset can be recalled onair safe, so active channels are not recalled. Default you have to press the preset button for 1 second before an 'safe' recall is done. After pressing 3 seconds the active channels are recalled as well (forced).
  You can setup the delay time for the safe and forced console presets, when you give 0 seconds the recall will be done 'direct' when the button is pressed.

- **Delete**
  When you click on this column the preset will be deleted (and also all references are deleted).

- **Create new console preset**
  By clicking on this link a popup will appear where you have to setup the label for the new preset.

5.14 Surface configuration

You can see an overview of the boards in the surface(s) on this page. These are grouped together, like their physical layout.

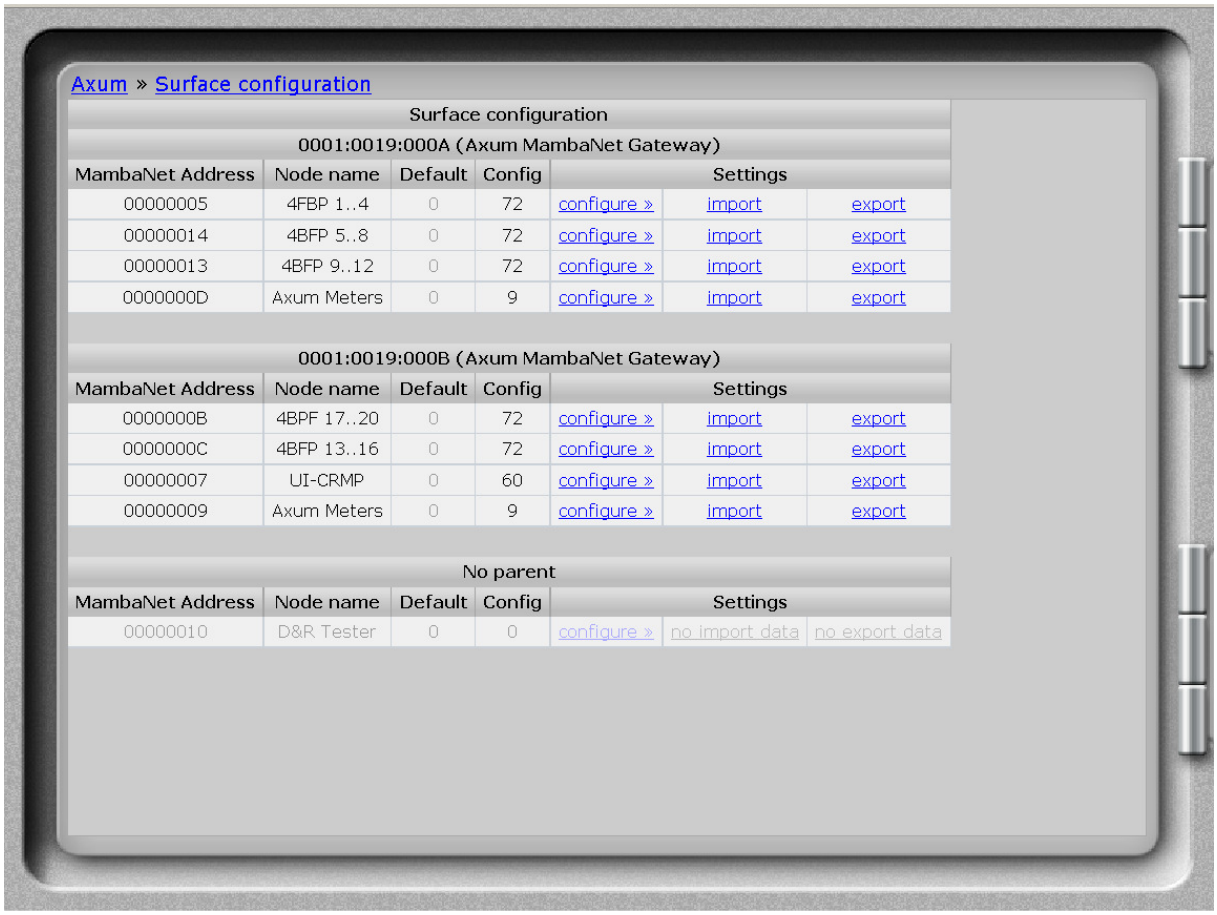

Axum » Surface configuration
Surface configuration
0001:0019:000A (Axum MambaNet Gateway)
MambaNet Address | Node name | Default | Config | Settings
00000005 | 4FBP 1..4 | 0 | 72 | configure » | import | export
00000014 | 4BFP 5..8 | 0 | 72 | configure » | import | export
00000013 | 4BFP 9..12 | 0 | 72 | configure » | import | export
0000000D | Axum Meters | 0 | 9 | configure » | import | export
0001:0019:000B (Axum MambaNet Gateway)
MambaNet Address | Node name | Default | Config | Settings
0000000B | 4BPF 17..20 | 0 | 72 | configure » | import | export
0000000C | 4BFP 13..16 | 0 | 72 | configure » | import | export
00000007 | UI-CRMP | 0 | 60 | configure » | import | export
00000009 | Axum Meters | 0 | 9 | configure » | import | export
No parent
MambaNet Address | Node name | Default | Config | Settings
00000010 | D&R Tester | 0 | 0 | configure » | no import data | no export data

Figure 23: Surface configuration

- **MambaNet Address**
  Show information on the internal used MambaNet addresses

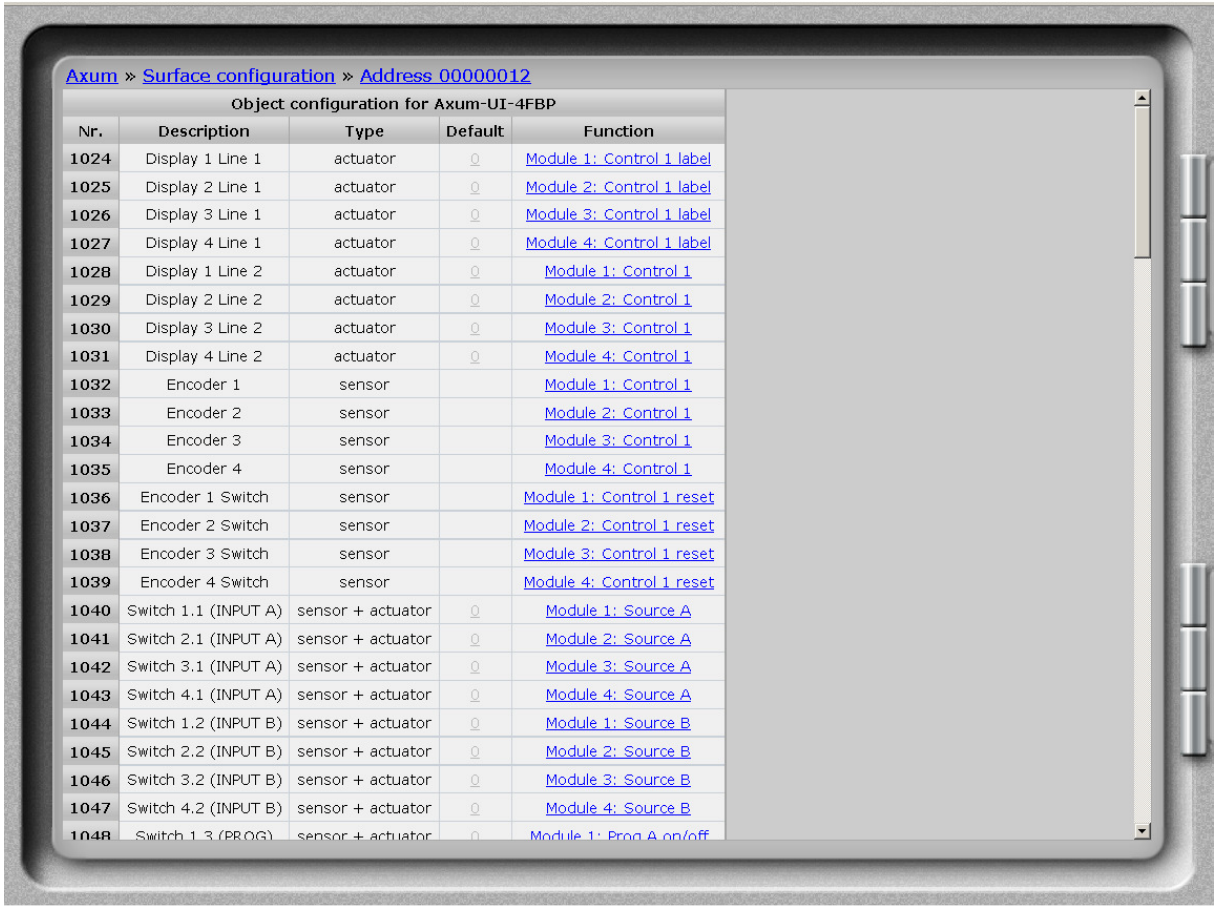
- **Node name**
  Logical name of the node

- **Default**
  Number of objects that have a default value set.

- **Config**
  Number of objects that are configured to an engine function.

- **Import/Export**
  Once you have configured the defaults and used engine functions you can export and import these settings. With export the current configuration is stored in the database, where you have to give a logical name (e.g. Module 5-8). With import you can restore a configuration to the same or a different node (of the same type). When you import Module 5-8 with an offset of -4 the configuration will be as you expect Module 1-4.

- **Configure**
  When you follow the link configure, you are able to setup the functionality for the different objects on the node. The sensor and actuator data types determine which function is able to connect to the object. For a complete list of the functions, you can go to chapter 5.16 Engine function.



Axum » Surface configuration » Address 00000012

Object configuration for Axum-UI-4FBP

Nr.	Description	Type	Default	Function
1024	Display 1 Line 1	actuator	0	Module 1: Control 1 label
1025	Display 2 Line 1	actuator	0	Module 2: Control 1 label
1026	Display 3 Line 1	actuator	0	Module 3: Control 1 label
1027	Display 4 Line 1	actuator	0	Module 4: Control 1 label
1028	Display 1 Line 2	actuator	0	Module 1: Control 1
1029	Display 2 Line 2	actuator	0	Module 2: Control 1
1030	Display 3 Line 2	actuator	0	Module 3: Control 1
1031	Display 4 Line 2	actuator	0	Module 4: Control 1
1032	Encoder 1	sensor		Module 1: Control 1
1033	Encoder 2	sensor		Module 2: Control 1
1034	Encoder 3	sensor		Module 3: Control 1
1035	Encoder 4	sensor		Module 4: Control 1
1036	Encoder 1 Switch	sensor		Module 1: Control 1 reset
1037	Encoder 2 Switch	sensor		Module 2: Control 1 reset
1038	Encoder 3 Switch	sensor		Module 3: Control 1 reset
1039	Encoder 4 Switch	sensor		Module 4: Control 1 reset
1040	Switch 1.1 (INPUT A)	sensor + actuator	0	Module 1: Source A
1041	Switch 2.1 (INPUT A)	sensor + actuator	0	Module 2: Source A
1042	Switch 3.1 (INPUT A)	sensor + actuator	0	Module 3: Source A
1043	Switch 4.1 (INPUT A)	sensor + actuator	0	Module 4: Source A
1044	Switch 1.2 (INPUT B)	sensor + actuator	0	Module 1: Source B
1045	Switch 2.2 (INPUT B)	sensor + actuator	0	Module 2: Source B
1046	Switch 3.2 (INPUT B)	sensor + actuator	0	Module 3: Source B
1047	Switch 4.2 (INPUT B)	sensor + actuator	0	Module 4: Source B
1048	Switch 1.3 (PROG)	sensor + actuator	0	Module 1: Prog A on/off

Figure 24: Node object configuration (to Oxygen 5 Digital functions)

- **Default**
  The gray value is the startup default, this may be changed by assigning a custom value. When you submit an empty box the object returns to the startup default value.

- **Function**
  Here you may select which engine function is connected to the object

5.15 Rack configuration

You can see an overview of the cards in the rack on this page. You can find information like the slot number, MambaNet address, card name, number of inputs and outputs.
The link Configure will go to a page for connecting objects of the card to Oxygen 5 Digital engine's functions.
You can consider this as the remote control configuration. For example you can connect:

- Start/stop functionality to remote outputs
- Source gain functionality to MIC gain
- Speaker level to CRM output level
- etc. etc.

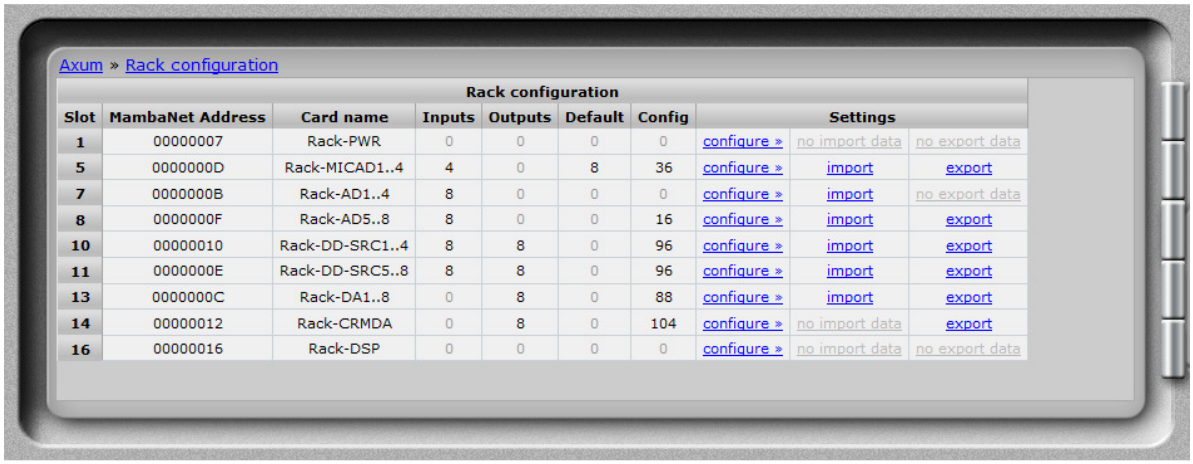

Axum » Rack configuration
Rack configuration
Slot | MambaNet Address | Card name | Inputs | Outputs | Default | Config | Settings
1 | 00000007 | Rack-PWR | 0 | 0 | 0 | 0 | configure » | no import data | no export data
5 | 0000000D | Rack-MICAD1..4 | 4 | 0 | 8 | 36 | configure » | import | export
7 | 0000000B | Rack-AD1..4 | 8 | 0 | 0 | 0 | configure » | import | no export data
8 | 0000000F | Rack-AD5..8 | 8 | 0 | 0 | 16 | configure » | import | export
10 | 00000010 | Rack-DD-SRC1..4 | 8 | 8 | 0 | 96 | configure » | import | export
11 | 0000000E | Rack-DD-SRC5..8 | 8 | 8 | 0 | 96 | configure » | import | export
13 | 0000000C | Rack-DA1..8 | 0 | 8 | 0 | 88 | configure » | import | export
14 | 00000012 | Rack-CRMDA | 0 | 8 | 0 | 104 | configure » | no import data | export
16 | 00000016 | Rack-DSP | 0 | 0 | 0 | 0 | configure » | no import data | no export data

Figure 25: Rack configuration

- **Slot**
  Slot number where the I/O card is located.

- **MambaNet Address**
  Show information on the internal used MambaNet addresses

- **Node name**
  Logical name of the node

- **Inputs**
  Number of mono input channels

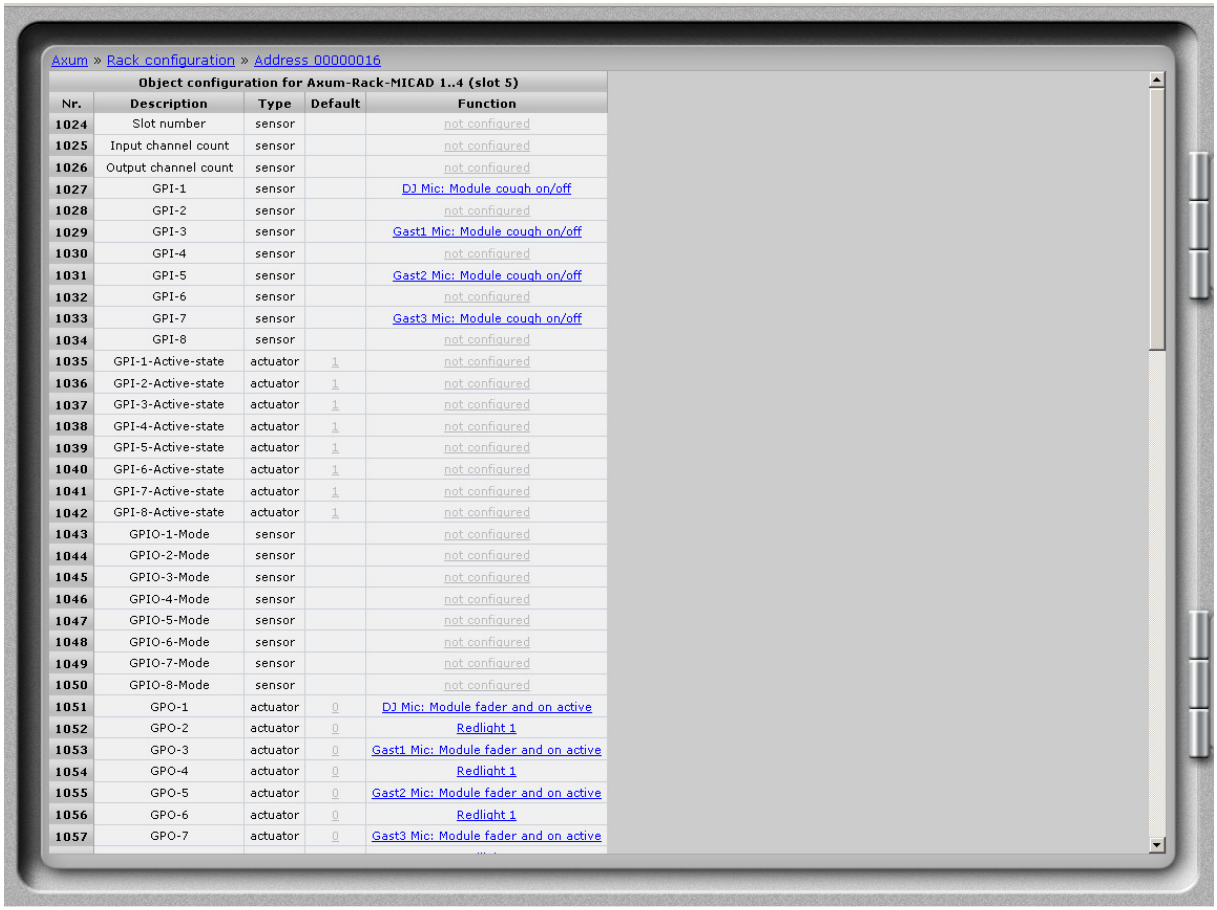
- **Outputs**
  Number of mono output channels

- **Default**
  Number of objects that have a default value set.

- **Config**
  Number of objects that are configured to an engine function.

- **Import/Export**
  Once you have configured the defaults and used engine functions you can export and import these settings. With export the current configuration is stored in the database, where you have to give a logical name (e.g. Module 5-8). With import you can restore a configuration to the same or a different node (of the same type). When you import Module 5-8 with an offset of -4 the configuration will be as you expect Module 1-4.

- **Configure**
  The page shown below gives an indication how the CRM output level objects connect to the Speaker level engine functions. By following the links, you can reconfigure the functions that connect to the objects. The sensor and actuator data types determine which function assigns to the object.
  For a complete list of the functions, you can look up chapter 5.16 Engine function.



Axum » Rack configuration » Address 00000016

Object configuration for Axum-Rack-MICAD 1..4 (slot 5)

Nr.	Description	Type	Default	Function
1024	Slot number	sensor		not configured
1025	Input channel count	sensor		not configured
1026	Output channel count	sensor		not configured
1027	GPI-1	sensor		DJ Mic: Module cough on/off
1028	GPI-2	sensor		not configured
1029	GPI-3	sensor		Gast1 Mic: Module cough on/off
1030	GPI-4	sensor		not configured
1031	GPI-5	sensor		Gast2 Mic: Module cough on/off
1032	GPI-6	sensor		not configured
1033	GPI-7	sensor		Gast3 Mic: Module cough on/off
1034	GPI-8	sensor		not configured
1035	GPI-1-Active-state	actuator	1	not configured
1036	GPI-2-Active-state	actuator	1	not configured
1037	GPI-3-Active-state	actuator	1	not configured
1038	GPI-4-Active-state	actuator	1	not configured
1039	GPI-5-Active-state	actuator	1	not configured
1040	GPI-6-Active-state	actuator	1	not configured
1041	GPI-7-Active-state	actuator	1	not configured
1042	GPI-8-Active-state	actuator	1	not configured
1043	GPIO-1-Mode	sensor		not configured
1044	GPIO-2-Mode	sensor		not configured
1045	GPIO-3-Mode	sensor		not configured
1046	GPIO-4-Mode	sensor		not configured
1047	GPIO-5-Mode	sensor		not configured
1048	GPIO-6-Mode	sensor		not configured
1049	GPIO-7-Mode	sensor		not configured
1050	GPIO-8-Mode	sensor		not configured
1051	GPO-1	actuator	0	DJ Mic: Module fader and on active
1052	GPO-2	actuator	0	Redlight 1
1053	GPO-3	actuator	0	Gast1 Mic: Module fader and on active
1054	GPO-4	actuator	0	Redlight 1
1055	GPO-5	actuator	0	Gast2 Mic: Module fader and on active
1056	GPO-6	actuator	0	Redlight 1
1057	GPO-7	actuator	0	Gast3 Mic: Module fader and on active

Figure 26: Node object configuration (to Oxygen 5 Digital functions)

5.16 Engine functions

The engine houses all mixing console functions and is able to connect various objects to its function as has been described in the previous chapters. Below we give a list of all available functions within the engine.

5.16.1 Modules

If four DSP cards are inserted, it is possible to have 128 modules (32 stereo modules per DSP card). For each module, you are able to connect objects to the following functions:

Function name	comments	Example object to connect to	Version
Label	Label of the module	Display	2.0
Source	Steps through the source list at the current module	Encoder, Display	2.0
Module preset A	Select the pre configured module preset 1A, 2A, 3A or 4A. (Which of the 4 depends on the last console preset used).	Switch	2.2
Module preset B	Select the pre configured module preset 1B, 2B, 3B or 4B. (Which of the 4 depends on the last console preset used).	Switch	2.2
Module preset A/B	Toggle the pre configured module preset 1A/1B, 2A/2B, 3A/3B or 4A/4B. (Which of the 4 depends on the last console preset used).	Switch	2.2
Module preset 1A	Select the pre configured Module preset 1A	Switch	2.1
Module preset 1B	Select the pre configured Module preset 1B	Switch	2.1
Module preset 2A	Select the pre configured Module preset 2A	Switch	2.1
Module preset 2B	Select the pre configured Module preset 2B	Switch	2.1
Module preset 3A	Select the pre configured Module preset 3A	Switch	2.1
Module preset 3B	Select the pre configured Module preset 3B	Switch	2.1
Module preset 4A	Select the pre configured Module preset 4A	Switch	2.1
Module preset 4B	Select the pre configured Module preset 4B	Switch	2.1
Source phantom	Toggles phantom power on the source routed to this module	Switch	2.0
Source pad	Toggles PAD on the source routed to this module	Switch	2.0
Source gain level	changes (analog) gain on the source routed to this module	Encoder	2.0
Source gain level reset	changes (analog) gain on the source routed to this module	Switch	2.0
Insert on/off	Switches the insert return on/off	Switch	2.0
Phase	Change phase of all channels in the module	Switch	2.0
Phase on/off	Switches the phase on/off	Switch	2.1
Gain level	Controls the gain in steps of 0.1 dB	Encoder, Display	2.0
Gain level reset	Sets the gain to 0 dB	Encoder switch	2.0
Low cut frequency	Low cut frequency control.	Encoder, Display	2.0
Low cut on/off	Select the low cut on/off	Switch	2.0
EQ Band 1 Level	Controls the EQ level in steps of 0.1 dB	Encoder	2.0
EQ Band 1 Frequency	Controls the EQ frequency	Encoder	2.0
EQ Band 1 Bandwidth	Controls the EQ bandwidth	Encoder	2.0
EQ Band 1 Level reset	Sets the EQ level to the band default	Encoder Switch	2.0
EQ Band 1 Frequency reset	Sets the EQ frequency to the band default	Encoder Switch	2.0
EQ Band 1 Bandwidth reset	Sets the EQ bandwidth to the band default	Encoder Switch	2.0
EQ Band 1 Type	Steps through the EQ band types available	Encoder	2.0
EQ Band 2 Level	Controls the EQ level in steps of 0.1 dB	Encoder	2.0
EQ Band 2 Frequency	Controls the EQ frequency	Encoder	2.0
EQ Band 2 Bandwidth	Controls the EQ bandwidth	Encoder	2.0
EQ Band 2 Level reset	Sets the EQ level to the band default	Encoder Switch	2.0
EQ Band 2 Frequency reset	Sets the EQ frequency to the band default	Encoder Switch	2.0
EQ Band 2 Bandwidth reset	Sets the EQ bandwidth to the band default	Encoder Switch	2.0
EQ Band 2 Type	Steps through the EQ band types available	Encoder	2.0
EQ Band 3 Level	Controls the EQ level in steps of 0.1 dB	Encoder	2.0

Function name	comments	Example object to connect to	Version
EQ Band 3 Frequency	Controls the EQ frequency	Encoder	2.0
EQ Band 3 Bandwidth	Controls the EQ bandwidth	Encoder	2.0
EQ Band 3 Level reset	Sets the EQ level to the band default	Encoder Switch	2.0
EQ Band 3 Frequency reset	Sets the EQ frequency to the band default	Encoder Switch	2.0
EQ Band 3 Bandwidth reset	Sets the EQ bandwidth to the band default	Encoder Switch	2.0
EQ Band 3 Type	Steps through the EQ band types available	Encoder	2.0
EQ Band 4 Level	Controls the EQ level in steps of 0.1 dB	Encoder	2.0
EQ Band 4 Frequency	Controls the EQ frequency	Encoder	2.0
EQ Band 4 Bandwidth	Controls the EQ bandwidth	Encoder	2.0
EQ Band 4 Level reset	Sets the EQ level to the band default	Encoder Switch	2.0
EQ Band 4 Frequency reset	Sets the EQ frequency to the band default	Encoder Switch	2.0
EQ Band 4 Bandwidth reset	Sets the EQ bandwidth to the band default	Encoder Switch	2.0
EQ Band 4 Type	Steps through the EQ band types available	Encoder	2.0
EQ Band 5 Level	Controls the EQ level in steps of 0.1 dB	Encoder	2.0
EQ Band 5 Frequency	Controls the EQ frequency	Encoder	2.0
EQ Band 5 Bandwidth	Controls the EQ bandwidth	Encoder	2.0
EQ Band 5 Level reset	Sets the EQ level to the band default	Encoder Switch	2.0
EQ Band 5 Frequency reset	Sets the EQ frequency to the band default	Encoder Switch	2.0
EQ Band 5 Bandwidth reset	Sets the EQ bandwidth to the band default	Encoder Switch	2.0
EQ Band 5 Type	Steps through the EQ band types available	Encoder	2.0
EQ Band 6 Level	Controls the EQ level in steps of 0.1 dB	Encoder	2.0
EQ Band 6 Frequency	Controls the EQ frequency	Encoder	2.0
EQ Band 6 Bandwidth	Controls the EQ bandwidth	Encoder	2.0
EQ Band 6 Level reset	Sets the EQ level to the band default	Encoder Switch	2.0
EQ Band 6 Frequency reset	Sets the EQ frequency to the band default	Encoder Switch	2.0
EQ Band 6 Bandwidth reset	Sets the EQ bandwidth to the band default	Encoder Switch	2.0
EQ Band 6 Type	Steps through the EQ band types available	Encoder	2.0
EQ On/Off	Select the EQ on/off (all bands!)	Switch	2.0
Downward expander threshold	Selects the threshold for the downwards expander in the range from -50 to 0 dB	Encoder, Display	2.1
AGC threshold	Selects the threshold for the AGC (automatic gain control) in the range from -30-0 dB	Encoder, Display	2.1
AGC ratio	Steps through the ratio of AGC (0-100%)	Encoder, Display	2.1
Dynamics On/Off	Select the dynamics on/off (dynamics is AGC+Expander)	Switch	2.0
Mono	Makes the module output mono	Switch	2.0
Mono On/Off	Select the Mono on/off	Switch	2.0
Pan	Steps the panning from left to right	Encoder, Display	2.0
Pan reset	Sets the panning to the center	Encoder switch	2.0
Module level	This function handles the fader functionality	Fader	2.0
Module on	This function handles like a on-switch (press = on)	Switch	2.0
Module off	This function handles like a off-switch (press = off)	Switch	2.0
Module on/off	This function handles like a on/off-switch (press = toggle between on and off)	Switch	2.0
Fader and on active	This function shows a '1' if the fader and on are active. When received a '1' the fader and on are activated	Switch, GPIO	2.1
Fader and on inactive	This function shows a '1' if the fader and on are inactive. When received a '1' the fader and on are made inactive.	Switch, GPIO	2.1

Function name	comments	Example object to connect to	Version
Fader and on active/inactive	This function shows a '1' if the fader and on are active. When received a '1' the 'fader and on'-state toggles between active and inactive	Switch, GPIO	2.1
Fader on	This function handles like a fader-on-switch (press = fader at 0 dB)	Switch	2.1
Fader off	This function handles like a fader-off-switch (press = fader is closed)	Switch	2.1
Fader on/off	This function handles like a fader on/off-switch (press = toggle between fader 0 dB and off)	Switch	2.1
Buss 1/2 level	Controls the sent level to the buss for this module	Encoder, Fader	2.0
Buss 1/2 level reset	Select 'Off 'or 'On = 0 dB' depending on current state	Encoder Switch	2.0
Buss 1/2 on	Select the buss on	Switch	2.2
Buss 1/2 off	Select the buss off	Switch	2.2
Buss 1/2 on/off	Select the buss on/off	Switch	2.0
Buss 1/2 pre	Select if this module sent pre or post fader signal to the buss	Switch	2.0
Buss 1/2 balance	The balance of the module signal sent to the buss	Encoder	2.0
Buss 1/2 balance reset	This resets the balance to the center position	Switch	2.0
Buss 3/4 level	Controls the sent level to the buss for this module	Encoder, Fader	2.0
Buss 3/4 level reset	Select 'Off 'or 'On = 0 dB' depending on current state	Encoder Switch	2.0
Buss 3/4 on	Select the buss on	Switch	2.2
Buss 3/4 off	Select the buss off	Switch	2.2
Buss 3/4 on/off	Select the buss on/off	Switch	2.0
Buss 3/4 pre	Select if this module sent pre or post fader signal to the buss	Switch	2.0
Buss 3/4 balance	The balance of the module signal sent to the buss	Encoder	2.0
Buss 3/4 balance reset	This resets the balance to the center position	Switch	2.0
Buss 5/6 level	Controls the sent level to the buss for this module	Encoder, Fader	2.0
Buss 5/6 level reset	Select 'Off 'or 'On = 0 dB' depending on current state	Encoder Switch	2.0
Buss 5/6 on	Select the buss on	Switch	2.2
Buss 5/6 off	Select the buss off	Switch	2.2
Buss 5/6 on/off	Select the buss on/off	Switch	2.0
Buss 5/6 pre	Select if this module sent pre or post fader signal to the buss	Switch	2.0
Buss 5/6 balance	The balance of the module signal sent to the buss	Encoder	2.0
Buss 5/6 balance reset	This resets the balance to the center position	Switch	2.0
Buss 7/8 level	Controls the sent level to the buss for this module	Encoder, Fader	2.0
Buss 7/8 level reset	Select 'Off 'or 'On = 0 dB' depending on current state	Encoder Switch	2.0
Buss 7/8 on	Select the buss on	Switch	2.2
Buss 7/8 off	Select the buss off	Switch	2.2
Buss 7/8 on/off	Select the buss on/off	Switch	2.0
Buss 7/8 pre	Select if this module sent pre or post fader signal to the buss	Switch	2.0
Buss 7/8 balance	The balance of the module signal sent to the buss	Encoder	2.0
Buss 7/8 balance reset	This resets the balance to the center position	Switch	2.0
Buss 9/10 level	Controls the sent level to the buss for this module	Encoder, Fader	2.0
Buss 9/10 level reset	Select 'Off 'or 'On = 0 dB' depending on current state	Encoder Switch	2.0
Buss 9/10 on	Select the buss on	Switch	2.2
Buss 9/10 off	Select the buss off	Switch	2.2
Buss 9/10 on/off	Select the buss on/off	Switch	2.0
Buss 9/10 pre	Select if this module sent pre or post fader signal to the buss	Switch	2.0
Buss 9/10 balance	The balance of the module signal sent to the buss	Encoder	2.0
Buss 9/10 balance reset	This resets the balance to the center position	Switch	2.0
Buss 11/12 level	Controls the sent level to the buss for this module	Encoder, Fader	2.0
Buss 11/12 level reset	Select 'Off 'or 'On = 0 dB' depending on current state	Encoder Switch	2.0
Buss 11/12 on	Select the buss on	Switch	2.2
Buss 11/12 off	Select the buss off	Switch	2.2
Buss 11/12 on/off	Select the buss on/off	Switch	2.0
Buss 11/12 pre	Select if this module sent pre or post fader signal to the buss	Switch	2.0
Buss 11/12 balance	The balance of the module signal sent to the buss	Encoder	2.0
Buss 11/12 balance reset	This resets the balance to the center position	Switch	2.0

Function name	comments	Example object to connect to	Version
Buss 13/14 level	Controls the sent level to the buss for this module	Encoder, Fader	2.0
Buss 13/14 level reset	Select 'Off 'or 'On = 0 dB' depending on current state	Encoder Switch	2.0
Buss 13/14 on	Select the buss on	Switch	2.2
Buss 13/14 off	Select the buss off	Switch	2.2
Buss 13/14 on/off	Select the buss on/off	Switch	2.0
Buss 13/14 pre	Select if this module sent pre or post fader signal to the buss	Switch	2.0
Buss 13/14 balance	The balance of the module signal sent to the buss	Encoder	2.0
Buss 13/14 balance reset	This resets the balance to the center position	Switch	2.0
Buss 15/16 level	Controls the sent level to the buss for this module	Encoder, Fader	2.0
Buss 15/16 level reset	Select 'Off 'or 'On = 0 dB' depending on current state	Encoder Switch	2.0
Buss 15/16 on	Select the buss on	Switch	2.2
Buss 15/16 off	Select the buss off	Switch	2.2
Buss 15/16 on/off	Select the buss on/off	Switch	2.0
Buss 15/16 pre	Select if this module sent pre or post fader signal to the buss	Switch	2.0
Buss 15/16 balance	The balance of the module signal sent to the buss	Encoder	2.0
Buss 15/16 balance reset	This resets the balance to the center position	Switch	2.0
Buss 17/18 level	Controls the sent level to the buss for this module	Encoder, Fader	2.0
Buss 17/18 level reset	Select 'Off 'or 'On = 0 dB' depending on current state	Encoder Switch	2.0
Buss 17/18 on	Select the buss on	Switch	2.2
Buss 17/18 off	Select the buss off	Switch	2.2
Buss 17/18 on/off	Select the buss on/off	Switch	2.0
Buss 17/18 pre	Select if this module sent pre or post fader signal to the buss	Switch	2.0
Buss 17/18 balance	The balance of the module signal sent to the buss	Encoder	2.0
Buss 17/18 balance reset	This resets the balance to the center position	Switch	2.0
Buss 19/20 level	Controls the sent level to the buss for this module	Encoder, Fader	2.0
Buss 19/20 level reset	Select 'Off 'or 'On = 0 dB' depending on current state	Encoder Switch	2.0
Buss 19/20 on	Select the buss on	Switch	2.2
Buss 19/20 off	Select the buss off	Switch	2.2
Buss 19/20 on/off	Select the buss on/off	Switch	2.0
Buss 19/20 pre	Select if this module sent pre or post fader signal to the buss	Switch	2.0
Buss 19/20 balance	The balance of the module signal sent to the buss	Encoder	2.0
Buss 19/20 balance reset	This resets the balance to the center position	Switch	2.0
Buss 21/22 level	Controls the sent level to the buss for this module	Encoder, Fader	2.0
Buss 21/22 level reset	Select 'Off 'or 'On = 0 dB' depending on current state	Encoder Switch	2.0
Buss 21/22 on	Select the buss on	Switch	2.2
Buss 21/22 off	Select the buss off	Switch	2.2
Buss 21/22 on/off	Select the buss on/off	Switch	2.0
Buss 21/22 pre	Select if this module sent pre or post fader signal to the buss	Switch	2.0
Buss 21/22 balance	The balance of the module signal sent to the buss	Encoder	2.0
Buss 21/22 balance reset	This resets the balance to the center position	Switch	2.0
Buss 23/24 level	Controls the sent level to the buss for this module	Encoder, Fader	2.0
Buss 23/24 level reset	Select 'Off 'or 'On = 0 dB' depending on current state	Encoder Switch	2.0
Buss 23/24 on	Select the buss on	Switch	2.2
Buss 23/24 off	Select the buss off	Switch	2.2
Buss 23/24 on/off	Select the buss on/off	Switch	2.0
Buss 23/24 pre	Select if this module sent pre or post fader signal to the buss	Switch	2.0
Buss 23/24 balance	The balance of the module signal sent to the buss	Encoder	2.0
Buss 23/24 balance reset	This resets the balance to the center position	Switch	2.0
Buss 25/26 level	Controls the sent level to the buss for this module	Encoder, Fader	2.0
Buss 25/26 level reset	Select 'Off 'or 'On = 0 dB' depending on current state	Encoder Switch	2.0
Buss 25/26 on	Select the buss on	Switch	2.2
Buss 25/26 off	Select the buss off	Switch	2.2

Function name	comments	Example object to connect to	Version
Buss 25/26 on/off	Select the buss on/off	Switch	2.0
Buss 25/26 pre	Select if this module sent pre or post fader signal to the buss	Switch	2.0
Buss 25/26 balance	The balance of the module signal sent to the buss	Encoder	2.0
Buss 25/26 balance reset	This resets the balance to the center position	Switch	2.0
Buss 27/28 level	Controls the sent level to the buss for this module	Encoder, Fader	2.0
Buss 27/28 level reset	Select 'Off 'or 'On = 0 dB' depending on current state	Encoder Switch	2.0
Buss 27/28 on	Select the buss on	Switch	2.2
Buss 27/28 off	Select the buss off	Switch	2.2
Buss 27/28 on/off	Select the buss on/off	Switch	2.0
Buss 27/28 pre	Select if this module sent pre or post fader signal to the buss	Switch	2.0
Buss 27/28 balance	The balance of the module signal sent to the buss	Encoder	2.0
Buss 27/28 balance reset	This resets the balance to the center position	Switch	2.0
Buss 29/30 level	Controls the sent level to the buss for this module	Encoder, Fader	2.0
Buss 29/30 level reset	Select 'Off 'or 'On = 0 dB' depending on current state	Encoder Switch	2.0
Buss 29/30 on	Select the buss on	Switch	2.2
Buss 29/30 off	Select the buss off	Switch	2.2
Buss 29/30 on/off	Select the buss on/off	Switch	2.0
Buss 29/30 pre	Select if this module sent pre or post fader signal to the buss	Switch	2.0
Buss 29/30 balance	The balance of the module signal sent to the buss	Encoder	2.0
Buss 29/30 balance reset	This resets the balance to the center position	Switch	2.0
Buss 31/32 level	Controls the sent level to the buss for this module	Encoder, Fader	2.0
Buss 31/32 level reset	Select 'Off 'or 'On = 0 dB' depending on current state	Encoder Switch	2.0
Buss 31/32 on	Select the buss on	Switch	2.2
Buss 31/32 off	Select the buss off	Switch	2.2
Buss 31/32 on/off	Select the buss on/off	Switch	2.0
Buss 31/32 pre	Select if this module sent pre or post fader signal to the buss	Switch	2.0
Buss 31/32 balance	The balance of the module signal sent to the buss	Encoder	2.0
Buss 31/32 balance reset	This resets the balance to the center position	Switch	2.0
Source start	Start (GPO) for current source	Switch	2.0
Source stop	Stop (GPO) for current source	Switch	2.0
Source start/stop	Toggle between start/stop for current source	Switch	2.0
Cough on/off	Toggle between Cough On and Cough off.	GPI, Switch	2.0
Source alert	Do/signal a alert from the selected source	GPI, Switch	2.0
Control	Control 1-4 data value (1-4 depends on console number for this module) The data interpretation depends on the mode of this control (source, gain, aux level etc. etc)	Encoder	2.1
Control label	Set label of the current selected control 1-4 mode (1-4 depends on console number for this module) (Source, gain, aux level etc. etc)	Display	2.1
Control reset	Sets the data to the control 1-4 default value or toggle functions (1-4 depends on console number for this module). The data interpretation depends on the mode of this control (source, gain, aux level etc. etc)	Encoder switch	2.1
Control 1	Control 1 data value The data interpretation depends on the mode of this control 1 (source, gain, aux level etc. etc)	Encoder	2.0
Control 1 label	Set label of the current selected control 1 mode (Source, gain, aux level etc. etc)	Display	2.0
Control 1 reset	Sets the data to the control 1 default value The data interpretation depends on the mode of this control 1 (source, gain, aux level etc. etc)	Encoder switch	2.0
Control 2	Control 2 data value The data interpretation depends on the mode of this control 2 (source, gain, aux level etc. etc)	Encoder	2.0
Control 2 label	Set label of the current selected control 2 mode (Source, gain, aux level etc. etc)	Display	2.0
Control 2 reset	Sets the data to the control 2 default value The data interpretation depends on the mode of this control 2 (source, gain, aux level etc. etc)	Encoder switch	2.0

Function name	comments	Example object to connect to	Version
Control 3	Control 3 data value The data interpretation depends on the mode of this control 3 (source, gain, aux level etc. etc)	Encoder	2.0
Control 3 label	Set label of the current selected control 3 mode (Source, gain, aux level etc. etc)	Display	2.0
Control 3 reset	Sets the data to the control 3 default value The data interpretation depends on the mode of this control 3 (source, gain, aux level etc. etc)	Encoder switch	2.0
Control 4	Control 4 data value The data interpretation depends on the mode of this control 4 (source, gain, aux level etc. etc)	Encoder	2.0
Control 4 label	Set label of the current selected control 4 mode (Source, gain, aux level etc. etc)	Display	2.0
Control 4 reset	Sets the data to the control 4 default value The data interpretation depends on the mode of this control 4 (source, gain, aux level etc. etc)	Encoder switch	2.0
Peak	Shows when this module has a peak in the audio level	LED	2.0
Signal	Shows when audio is received at the module	LED	2.0
Processing preset	With this function you can scroll through all processing presets.	Encoder, Display	2.1
Routing preset 1A	Loads module routing preset 1A	Switch	2.2
Routing preset 1B	Loads module routing preset 1B	Switch	2.2
Routing preset 2A	Loads module routing preset 2A	Switch	2.2
Routing preset 2B	Loads module routing preset 2B	Switch	2.2
Routing preset 3A	Loads module routing preset 3A	Switch	2.2
Routing preset 3B	Loads module routing preset 3B	Switch	2.2
Routing preset 4A	Loads module routing preset 4A	Switch	2.2
Routing preset 4B	Loads module routing preset 4B	Switch	2.2
Talkback 1 to N-1	Switches talkback 1 to all output where the current modules N-1 is used.	Switch	2.1
Talkback 2 to N-1	Switches talkback 2 to all output where the current modules N-1 is used.	Switch	2.1
Talkback 3 to N-1	Switches talkback 3 to all output where the current modules N-1 is used.	Switch	2.1
Talkback 4 to N-1	Switches talkback 4 to all output where the current modules N-1 is used.	Switch	2.1
Talkback 5 to N-1	Switches talkback 5 to all output where the current modules N-1 is used.	Switch	2.1
Talkback 6 to N-1	Switches talkback 6 to all output where the current modules N-1 is used.	Switch	2.1
Talkback 7 to N-1	Switches talkback 7 to all output where the current modules N-1 is used.	Switch	2.1
Talkback 8 to N-1	Switches talkback 8 to all output where the current modules N-1 is used.	Switch	2.1
Talkback 9 to N-1	Switches talkback 9 to all output where the current modules N-1 is used.	Switch	2.1
Talkback 10 to N-1	Switches talkback 10 to all output where the current modules N-1 is used.	Switch	2.1
Talkback 11 to N-1	Switches talkback 11 to all output where the current modules N-1 is used.	Switch	2.1
Talkback 12 to N-1	Switches talkback 12 to all output where the current modules N-1 is used.	Switch	2.1
Talkback 13 to N-1	Switches talkback 13 to all output where the current modules N-1 is used.	Switch	2.1
Talkback 14 to N-1	Switches talkback 14 to all output where the current modules N-1 is used.	Switch	2.1
Talkback 15 to N-1	Switches talkback 15 to all output where the current modules N-1 is used.	Switch	2.1
Talkback 16 to N-1	Switches talkback 16 to all output where the current modules N-1 is used.	Switch	2.1

5.16.2 Busses

The Oxygen 5 Digital has 16 stereo busses. For each buss, you are able to connect objects with the following functions:

Function name	comments	Object to connect to	Version
Buss master level	Controls the buss master level	Encoder, Fader	2.0
Buss master level reset	Select 'On and 0 dB'	Encoder switch	2.0
Buss master on/off	Select buss on/off	Switch	2.0
Buss master pre	Switches the total buss pre or post	Switch	2.0
Buss Label	Label of the buss	Display	2.0
Buss Audio level left	Level meter left	Level meter	2.0
Buss Audio level right	Level meter right	Level meter	2.0

5.16.3 Monitor busses

With 4 DSP cards, the Oxygen 5 Digital will have 16 stereo monitor busses (4 per DSP card).
For each monitor buss, you are able to connect objects to do the following functions:

Function name	Comments	Object to connect to	Version
Buss 1/2 on	Select buss 1/2 for the monitor buss	Switch	2.2
Buss 1/2 off	Deselect buss 1/2 for the monitor buss	Switch	2.2
Buss 1/2 on/off	Toggle buss 1/2 for the monitor buss	Switch	2.0
Buss 3/4 on	Select buss 3/4 for the monitor buss	Switch	2.2
Buss 3/4 off	Deselect buss 3/4 for the monitor buss	Switch	2.2
Buss 3/4 on/off	Toggle buss 3/4 for the monitor buss	Switch	2.0
Buss 5/6 on	Select buss 5/6 for the monitor buss	Switch	2.2
Buss 5/6 off	Deselect buss 5/6 for the monitor buss	Switch	2.2
Buss 5/6 on/off	Toggle buss 5/6 for the monitor buss	Switch	2.0
Buss 7/8 on	Select buss 7/8 for the monitor buss	Switch	2.2
Buss 7/8 off	Deselect buss 7/8 for the monitor buss	Switch	2.2
Buss 7/8 on/off	Toggle buss 7/8 for the monitor buss	Switch	2.0
Buss 9/10 on	Select buss 9/10 for the monitor buss	Switch	2.2
Buss 9/10 off	Deselect buss 9/10 for the monitor buss	Switch	2.2
Buss 9/10 on/off	Toggle buss 9/10 for the monitor buss	Switch	2.0
Buss 11/12 on	Select buss 11/12 for the monitor buss	Switch	2.2
Buss 11/12 off	Deselect buss 11/12 for the monitor buss	Switch	2.2
Buss 11/12 on/off	Toggle buss 11/12 for the monitor buss	Switch	2.0
Buss 13/14 on	Select buss 13/14 for the monitor buss	Switch	2.2
Buss 13/14 off	Deselect buss 13/14 for the monitor buss	Switch	2.2
Buss 13/14 on/off	Toggle buss 13/14 for the monitor buss	Switch	2.0
Buss 15/16 on	Select buss 15/16 for the monitor buss	Switch	2.2
Buss 15/16 off	Deselect buss 15/16 for the monitor buss	Switch	2.2
Buss 15/16 on/off	Toggle buss 15/16 for the monitor buss	Switch	2.0
Buss 17/18 on	Select buss 17/18 for the monitor buss	Switch	2.2
Buss 17/18 off	Deselect buss 17/18 for the monitor buss	Switch	2.2
Buss 17/18 on/off	Toggle buss 17/18 for the monitor buss	Switch	2.0
Buss 19/20 on	Select buss 19/20 for the monitor buss	Switch	2.2
Buss 19/20 off	Deselect buss 19/20 for the monitor buss	Switch	2.2
Buss 19/20 on/off	Toggle buss 19/20 for the monitor buss	Switch	2.0
Buss 21/22 on	Select buss 21/22 for the monitor buss	Switch	2.2
Buss 21/22 off	Deselect buss 21/22 for the monitor buss	Switch	2.2
Buss 21/22 on/off	Toggle buss 21/22 for the monitor buss	Switch	2.0
Buss 23/24 on	Select buss 23/24 for the monitor buss	Switch	2.2
Buss 23/24 off	Deselect buss 23/24 for the monitor buss	Switch	2.2
Buss 23/24 on/off	Toggle buss 23/24 for the monitor buss	Switch	2.0
Buss 25/26 on	Select buss 25/26 for the monitor buss	Switch	2.2
Buss 25/26 off	Deselect buss 25/26 for the monitor buss	Switch	2.2
Buss 25/26 on/off	Toggle buss 25/26 for the monitor buss	Switch	2.0
Buss 27/28 on	Select buss 27/28 for the monitor buss	Switch	2.2
Buss 27/28 off	Deselect buss 27/28 for the monitor buss	Switch	2.2
Buss 27/28 on/off	Toggle buss 27/28 for the monitor buss	Switch	2.0
Buss 29/30 on	Select buss 29/30 for the monitor buss	Switch	2.2
Buss 29/30 off	Deselect buss 29/30 for the monitor buss	Switch	2.2
Buss 29/30 on/off	Toggle buss 29/30 for the monitor buss	Switch	2.0
Buss 31/32 on	Select buss 31/32 for the monitor buss	Switch	2.2
Buss 31/32 off	Deselect buss 31/32 for the monitor buss	Switch	2.2
Buss 31/32 on/off	Toggle buss 31/32 for the monitor buss	Switch	2.0
Ext 1 on	Select Ext 1 for the monitor buss	Switch	2.2
Ext 1 off	Deselect Ext 1 for the monitor buss	Switch	2.2
Ext 1 on/off	Toggle Ext 1 for the monitor buss	Switch	2.0
Ext 2 on	Select Ext 2 for the monitor buss	Switch	2.2
Ext 2 off	Deselect Ext 2 for the monitor buss	Switch	2.2
Ext 2 on/off	Toggle Ext 2 for the monitor buss	Switch	2.0
Ext 3 on	Select Ext 3 for the monitor buss	Switch	2.2
Ext 3 off	Deselect Ext 3 for the monitor buss	Switch	2.2
Ext 3 on/off	Toggle Ext 3 for the monitor buss	Switch	2.0
Ext 4 on	Select Ext 4 for the monitor buss	Switch	2.2
Ext 4 off	Deselect Ext 4 for the monitor buss	Switch	2.2
Ext 4 on/off	Toggle Ext 4 for the monitor buss	Switch	2.0
Ext 5 on	Select Ext 5 for the monitor buss	Switch	2.2
Ext 5 off	Deselect Ext 5 for the monitor buss	Switch	2.2
Ext 5 on/off	Toggle Ext 5 for the monitor buss	Switch	2.0
Ext 6 on	Select Ext 6 for the monitor buss	Switch	2.2

Function name	Comments	Object to connect to	Version
Ext 6 off	Deselect Ext 6 for the monitor buss	Switch	2.2
Ext 6 on/off	Toggle Ext 6 for the monitor buss	Switch	2.0
Ext 7 on	Select Ext 7 for the monitor buss	Switch	2.2
Ext 7 off	Deselect Ext 7 for the monitor buss	Switch	2.2
Ext 7 on/off	Toggle Ext 7 for the monitor buss	Switch	2.0
Ext 8 on	Select Ext 8 for the monitor buss	Switch	2.2
Ext 8 off	Deselect Ext 8 for the monitor buss	Switch	2.2
Ext 8 on/off	Toggle Ext 8 for the monitor buss	Switch	2.0
Mute	Mutes the output	GPO, CRM mute	2.0
Dim	Dims the output	CRM level	2.0
Phones level	Controls the level in steps of 0.1 dB	CRM phones level	2.0
Mono	Mono the output	CRM Mono	2.0
Phase	Phase reverse the right output	CRM Phase	2.0
Speaker level	Controls the level in steps of 0.1 dB	CRM speaker level	2.0
Talkback 1	Talkback to monitor from Talkback 1	Switch	2.0
Talkback 2	Talkback to monitor from Talkback 2	Switch	2.0
Talkback 3	Talkback to monitor from Talkback 3	Switch	2.0
Talkback 4	Talkback to monitor from Talkback 4	Switch	2.0
Talkback 5	Talkback to monitor from Talkback 5	Switch	2.0
Talkback 6	Talkback to monitor from Talkback 6	Switch	2.0
Talkback 7	Talkback to monitor from Talkback 7	Switch	2.0
Talkback 8	Talkback to monitor from Talkback 8	Switch	2.0
Talkback 9	Talkback to monitor from Talkback 9	Switch	2.0
Talkback 10	Talkback to monitor from Talkback 10	Switch	2.0
Talkback 11	Talkback to monitor from Talkback 11	Switch	2.0
Talkback 12	Talkback to monitor from Talkback 12	Switch	2.0
Talkback 13	Talkback to monitor from Talkback 13	Switch	2.0
Talkback 14	Talkback to monitor from Talkback 14	Switch	2.0
Talkback 15	Talkback to monitor from Talkback 15	Switch	2.0
Talkback 16	Talkback to monitor from Talkback 16	Switch	2.0
Audio level left	Audio level for level meter	Level meter	2.0
Audio level right	Audio level for level meter	Level meter	2.0
Label	Name of the monitor buss	Display	2.0

5.16.4 Global

It will be possible to have the following global sensor change receivers:

Function Name	Comments	Object to connect to	Version
Red-light 1	Activate the red-light 1 buss	Switch, GPO	2.0
Red-light 2	Activate the red-light 2 buss	Switch, GPO	2.0
Red-light 3	Activate the red-light 3 buss	Switch, GPO	2.0
Red-light 4	Activate the red-light 4 buss	Switch, GPO	2.0
Red-light 5	Activate the red-light 5 buss	Switch, GPO	2.0
Red-light 6	Activate the red-light 6 buss	Switch, GPO	2.0
Red-light 7	Activate the red-light 7 buss	Switch, GPO	2.0
Red-light 8	Activate the red-light 8 buss	Switch, GPO	2.0
Buss 1/2 reset	Do buss 1/2 reset	Switch	2.0
Buss 3/4 reset	Do buss 3/4 reset	Switch	2.0
Buss 5/6 reset	Do buss 5/6 reset	Switch	2.0
Buss 7/8 reset	Do buss 7/8 reset	Switch	2.0
Buss 9/10 reset	Do buss 9/10 reset	Switch	2.0
Buss 11/12 reset	Do buss 11/12 reset	Switch	2.0
Buss 13/14 reset	Do buss 13/14 reset	Switch	2.0
Buss 15/16 reset	Do buss 15/16 reset	Switch	2.0
Buss 17/18 reset	Do buss 17/18 reset	Switch	2.0
Buss 19/20 reset	Do buss 19/20 reset	Switch	2.0
Buss 21/22 reset	Do buss 21/22 reset	Switch	2.0
Buss 23/24 reset	Do buss 23/24 reset	Switch	2.0
Buss 25/26 reset	Do buss 25/26 reset	Switch	2.0
Buss 27/28 reset	Do buss 27/28 reset	Switch	2.0
Buss 29/30 reset	Do buss 29/30 reset	Switch	2.0
Buss 31/32 reset	Do buss 31/32 reset	Switch	2.0
Control 1 mode source	Select mode source for control 1	Switch	2.0
Control 1 mode processing preset	Select mode processing preset for control 1	Switch	2.1
Control 1 mode source gain	Select mode source gain for control 1	Switch	2.0
Control 1 mode source phantom	Select mode phantom for control 1	Switch	2.1
Control 1 mode source pad	Select mode pad for control 1	Switch	2.1
Control 1 mode gain	Select mode gain for control 1	Switch	2.0
Control 1 mode phase	Select mode phase for control 1	Switch	2.0
Control 1 mode low cut	Select mode low cut for control 1	Switch	2.0
Control 1 mode Insert on/off	Select mode insert for control 1	Switch	2.2
Control 1 mode EQ band 1 level	Select mode EQ band 1 level for control 1	Switch	2.0
Control 1 mode EQ band 1 frequency	Select mode EQ band 1 freq for control 1	Switch	2.0
Control 1 mode EQ band 1 bandwidth	Select mode EQ band 1 bw for control 1	Switch	2.0
Control 1 mode EQ band 1 type	Select mode EQ band 1 type for control 1	Switch	2.0
Control 1 mode EQ band 2 level	Select mode EQ band 2 level for control 1	Switch	2.0
Control 1 mode EQ band 2 frequency	Select mode EQ band 2 freq for control 1	Switch	2.0
Control 1 mode EQ band 2 bandwidth	Select mode EQ band 2 bw for control 1	Switch	2.0
Control 1 mode EQ band 2 type	Select mode EQ band 2 type for control 1	Switch	2.0
Control 1 mode EQ band 3 level	Select mode EQ band 3 level for control 1	Switch	2.0
Control 1 mode EQ band 3 frequency	Select mode EQ band 3 freq for control 1	Switch	2.0
Control 1 mode EQ band 3 bandwidth	Select mode EQ band 3 bw for control 1	Switch	2.0
Control 1 mode EQ band 3 type	Select mode EQ band 3 type for control 1	Switch	2.0
Control 1 mode EQ band 4 level	Select mode EQ band 4 level for control 1	Switch	2.0
Control 1 mode EQ band 4 frequency	Select mode EQ band 4 freq for control 1	Switch	2.0
Control 1 mode EQ band 4 bandwidth	Select mode EQ band 4 bw for control 1	Switch	2.0
Control 1 mode EQ band 4 type	Select mode EQ band 4 type for control 1	Switch	2.0
Control 1 mode EQ band 5 level	Select mode EQ band 5 level for control 1	Switch	2.0
Control 1 mode EQ band 5 frequency	Select mode EQ band 5 freq for control 1	Switch	2.0
Control 1 mode EQ band 5 bandwidth	Select mode EQ band 5 bw for control 1	Switch	2.0
Control 1 mode EQ band 5 type	Select mode EQ band 5 type for control 1	Switch	2.0
Control 1 mode EQ band 6 level	Select mode EQ band 6 level for control 1	Switch	2.0
Control 1 mode EQ band 6 frequency	Select mode EQ band 6 freq for control 1	Switch	2.0

Function Name	Comments	Object to connect to	Version
Control 1 mode EQ band 6 bandwidth	Select mode EQ band 6 bw for control 1	Switch	2.0
Control 1 mode EQ band 6 type	Select mode EQ band 6 type for control 1	Switch	2.0
Control 1 mode module EQ on/off	Select mode EQ on/off for control 1	Switch	2.1
Control 1 mode module downward expander threshold	Select mode downward expander threshold	Switch	2.1
Control 1 mode AGC threshold	Select mode AGC threshold	Switch	2.1
Control 1 mode AGC ratio	Select mode AGC ratio for control 1	Switch	2.0
Control 1 mode Dynamics on/off	Select mode Dynamics on/off for control 1	Switch	2.2
Control 1 mode mono	Select mode mono for control 1	Switch	2.0
Control 1 mode pan	Select mode pan for control 1	Switch	2.0
Control 1 mode module level	Select mode module level for control 1	Switch	2.0
Control 1 mode buss ½	Select mode buss 1/2 for control 1	Switch	2.0
Control 1 mode buss 1/2 balance	Select mode buss 1/2 bal. for control 1	Switch	2.0
Control 1 mode buss 3/4	Select mode buss 3/4 for control 1	Switch	2.0
Control 1 mode buss 3/4 balance	Select mode buss 3/4 bal. for control 1	Switch	2.0
Control 1 mode buss 5/6	Select mode buss 5/6 for control 1	Switch	2.0
Control 1 mode buss 5/6 balance	Select mode buss 5/6 bal. for control 1	Switch	2.0
Control 1 mode buss 7/8	Select mode buss 7/8 for control 1	Switch	2.0
Control 1 mode buss 7/8 balance	Select mode buss 7/8 bal. for control 1	Switch	2.0
Control 1 mode buss 9/10	Select mode buss 9/10 for control 1	Switch	2.0
Control 1 mode buss 9/10 balance	Select mode buss 9/10 bal. for control 1	Switch	2.0
Control 1 mode buss 11/12	Select mode buss 11/12 for control 1	Switch	2.0
Control 1 mode buss 11/12 balance	Select mode buss 11/12 bal. for control 1	Switch	2.0
Control 1 mode buss 13/14	Select mode buss 13/14 for control 1	Switch	2.0
Control 1 mode buss 13/14 balance	Select mode buss 13/14 bal. for control 1	Switch	2.0
Control 1 mode buss 15/16	Select mode buss 15/16 for control 1	Switch	2.0
Control 1 mode buss 15/16 balance	Select mode buss 15/16 bal. for control 1	Switch	2.0
Control 1 mode buss 17/18	Select mode buss 17/18 for control 1	Switch	2.0
Control 1 mode buss 17/18 balance	Select mode buss 17/18 bal. for control 1	Switch	2.0
Control 1 mode buss 19/20	Select mode buss 19/20 for control 1	Switch	2.0
Control 1 mode buss 19/20 balance	Select mode buss 19/20 bal. for control 1	Switch	2.0
Control 1 mode buss 21/22	Select mode buss 21/22 for control 1	Switch	2.0
Control 1 mode buss 21/22 balance	Select mode buss 21/22 bal. for control 1	Switch	2.0
Control 1 mode buss 23/24	Select mode buss 23/24 for control 1	Switch	2.0
Control 1 mode buss 23/24 balance	Select mode buss 23/24 bal. for control 1	Switch	2.0
Control 1 mode buss 25/26	Select mode buss 25/26 for control 1	Switch	2.0
Control 1 mode buss 25/26 balance	Select mode buss 25/26 bal. for control 1	Switch	2.0
Control 1 mode buss 27/28	Select mode buss 27/28 for control 1	Switch	2.0
Control 1 mode buss 27/28 balance	Select mode buss 27/28 bal. for control 1	Switch	2.0
Control 1 mode buss 29/30	Select mode buss 29/30 for control 1	Switch	2.0
Control 1 mode buss 29/30 balance	Select mode buss 29/30 bal. for control 1	Switch	2.0
Control 1 mode buss 31/32	Select mode buss 31/32 for control 1	Switch	2.0
Control 1 mode buss 31/32 balance	Select mode buss 31/32 bal. for control 1	Switch	2.0
Control 2 mode source	Select mode source for control 2	Switch	2.0
Control 2 mode processing preset	Select mode processing preset for control 2	Switch	2.1
Control 2 mode source gain	Select mode source gain for control 2	Switch	2.0
Control 2 mode source phantom	Select mode phantom for control 2	Switch	2.1
Control 2 mode source pad	Select mode pad for control 2	Switch	2.1
Control 2 mode gain	Select mode gain for control 2	Switch	2.0
Control 2 mode phase	Select mode phase for control 2	Switch	2.0
Control 2 mode low cut	Select mode low cut for control 2	Switch	2.0
Control 2 mode Insert on/off	Select mode insert for control 2	Switch	2.2

Function Name	Comments	Object to connect to	Version
Control 2 mode EQ band 1 level	Select mode EQ band 1 level for control 2	Switch	2.0
Control 2 mode EQ band 1 frequency	Select mode EQ band 1 freq for control 2	Switch	2.0
Control 2 mode EQ band 1 bandwidth	Select mode EQ band 1 bw for control 2	Switch	2.0
Control 2 mode EQ band 1 type	Select mode EQ band 1 type for control 2	Switch	2.0
Control 2 mode EQ band 2 level	Select mode EQ band 2 level for control 2	Switch	2.0
Control 2 mode EQ band 2 frequency	Select mode EQ band 2 freq for control 2	Switch	2.0
Control 2 mode EQ band 2 bandwidth	Select mode EQ band 2 bw for control 2	Switch	2.0
Control 2 mode EQ band 2 type	Select mode EQ band 2 type for control 2	Switch	2.0
Control 2 mode EQ band 3 level	Select mode EQ band 3 level for control 2	Switch	2.0
Control 2 mode EQ band 3 frequency	Select mode EQ band 3 freq for control 2	Switch	2.0
Control 2 mode EQ band 3 bandwidth	Select mode EQ band 3 bw for control 2	Switch	2.0
Control 2 mode EQ band 3 type	Select mode EQ band 3 type for control 2	Switch	2.0
Control 2 mode EQ band 4 level	Select mode EQ band 4 level for control 2	Switch	2.0
Control 2 mode EQ band 4 frequency	Select mode EQ band 4 freq for control 2	Switch	2.0
Control 2 mode EQ band 4 bandwidth	Select mode EQ band 4 bw for control 2	Switch	2.0
Control 2 mode EQ band 4 type	Select mode EQ band 4 type for control 2	Switch	2.0
Control 2 mode EQ band 5 level	Select mode EQ band 5 level for control 2	Switch	2.0
Control 2 mode EQ band 5 frequency	Select mode EQ band 5 freq for control 2	Switch	2.0
Control 2 mode EQ band 5 bandwidth	Select mode EQ band 5 bw for control 2	Switch	2.0
Control 2 mode EQ band 5 type	Select mode EQ band 5 type for control 2	Switch	2.0
Control 2 mode EQ band 6 level	Select mode EQ band 6 level for control 2	Switch	2.0
Control 2 mode EQ band 6 frequency	Select mode EQ band 6 freq for control 2	Switch	2.0
Control 2 mode EQ band 6 bandwidth	Select mode EQ band 6 bw for control 2	Switch	2.0
Control 2 mode EQ band 6 type	Select mode EQ band 6 type for control 2	Switch	2.0
Control 2 mode module EQ on/off	Select mode EQ on/off for control 2	Switch	2.1
Control 2 mode module downward expander threshold	Select mode downward expander threshold	Switch	2.1
Control 2 mode AGC threshold	Select mode AGC threshold	Switch	2.1
Control 2 mode AGC ratio	Select mode AGC ratio for control 2	Switch	2.0
Control 2 mode Dynamics on/off	Select mode Dynamics on/off	Switch	2.2
Control 2 mode mono	Select mode mono for control 2	Switch	2.0
Control 2 mode pan	Select mode pan for control 2	Switch	2.0
Control 2 mode module level	Select mode module level for control 2	Switch	2.0
Control 2 mode buss 1/2	Select mode buss 1/2 for control 2	Switch	2.0
Control 2 mode buss 1/2 balance	Select mode buss 1/2 bal. for control 2	Switch	2.0
Control 2 mode buss 3/4	Select mode buss 3/4 for control 2	Switch	2.0
Control 2 mode buss 3/4 balance	Select mode buss 3/4 bal. for control 2	Switch	2.0
Control 2 mode buss 5/6	Select mode buss 5/6 for control 2	Switch	2.0
Control 2 mode buss 5/6 balance	Select mode buss 5/6 bal. for control 2	Switch	2.0
Control 2 mode buss 7/8	Select mode buss 7/8 for control 2	Switch	2.0
Control 2 mode buss 7/8 balance	Select mode buss 7/8 bal. for control 2	Switch	2.0
Control 2 mode buss 9/10	Select mode buss 9/10 for control 2	Switch	2.0
Control 2 mode buss 9/10 balance	Select mode buss 9/10 bal. for control 2	Switch	2.0
Control 2 mode buss 11/12	Select mode buss 11/12 for control 2	Switch	2.0
Control 2 mode buss 11/12 balance	Select mode buss 11/12 bal. for control 2	Switch	2.0
Control 2 mode buss 13/14	Select mode buss 13/14 for control 2	Switch	2.0
Control 2 mode buss 13/14 balance	Select mode buss 13/14 bal. for control 2	Switch	2.0
Control 2 mode buss 15/16	Select mode buss 15/16 for control 2	Switch	2.0
Control 2 mode buss 15/16 balance	Select mode buss 15/16 bal. for control 2	Switch	2.0
Control 2 mode buss 17/18	Select mode buss 17/18 for control 2	Switch	2.0

Function Name	Comments	Object to connect to	Version
Control 2 mode buss 17/18 balance	Select mode buss 17/18 bal. for control 2	Switch	2.0
Control 2 mode buss 19/20	Select mode buss 19/20 for control 2	Switch	2.0
Control 2 mode buss 19/20 balance	Select mode buss 19/20 bal. for control 2	Switch	2.0
Control 2 mode buss 21/22	Select mode buss 21/22 for control 2	Switch	2.0
Control 2 mode buss 21/22 balance	Select mode buss 21/22 bal. for control 2	Switch	2.0
Control 2 mode buss 23/24	Select mode buss 23/24 for control 2	Switch	2.0
Control 2 mode buss 23/24 balance	Select mode buss 23/24 bal. for control 2	Switch	2.0
Control 2 mode buss 25/26	Select mode buss 25/26 for control 2	Switch	2.0
Control 2 mode buss 25/26 balance	Select mode buss 25/26 bal. for control 2	Switch	2.0
Control 2 mode buss 27/28	Select mode buss 27/28 for control 2	Switch	2.0
Control 2 mode buss 27/28 balance	Select mode buss 27/28 bal. for control 2	Switch	2.0
Control 2 mode buss 29/30	Select mode buss 29/30 for control 2	Switch	2.0
Control 2 mode buss 29/30 balance	Select mode buss 29/30 bal. for control 2	Switch	2.0
Control 2 mode buss 31/32	Select mode buss 31/32 for control 2	Switch	2.0
Control 2 mode buss 31/32 balance	Select mode buss 31/32 bal. for control 2	Switch	2.0
Control 3 mode source	Select mode source for control 3	Switch	2.0
Control 3 mode processing preset	Select mode processing preset for control 3	Switch	2.1
Control 3 mode source gain	Select mode source gain for control 3	Switch	2.0
Control 3 mode source phantom	Select mode phantom for control 3	Switch	2.1
Control 3 mode source pad	Select mode pad for control 3	Switch	2.1
Control 3 mode gain	Select mode gain for control 3	Switch	2.0
Control 3 mode phase	Select mode phase for control 3	Switch	2.0
Control 3 mode low cut	Select mode low cut for control 3	Switch	2.0
Control 3 mode Insert on/off	Select mode insert for control 3	Switch	2.2
Control 3 mode EQ band 1 level	Select mode EQ band 1 level for control 3	Switch	2.0
Control 3 mode EQ band 1 frequency	Select mode EQ band 1 freq for control 3	Switch	2.0
Control 3 mode EQ band 1 bandwidth	Select mode EQ band 1 bw for control 3	Switch	2.0
Control 3 mode EQ band 1 type	Select mode EQ band 1 type for control 3	Switch	2.0
Control 3 mode EQ band 2 level	Select mode EQ band 2 level for control 3	Switch	2.0
Control 3 mode EQ band 2 frequency	Select mode EQ band 2 freq for control 3	Switch	2.0
Control 3 mode EQ band 2 bandwidth	Select mode EQ band 2 bw for control 3	Switch	2.0
Control 3 mode EQ band 2 type	Select mode EQ band 2 type for control 3	Switch	2.0
Control 3 mode EQ band 3 level	Select mode EQ band 3 level for control 3	Switch	2.0
Control 3 mode EQ band 3 frequency	Select mode EQ band 3 freq for control 3	Switch	2.0
Control 3 mode EQ band 3 bandwidth	Select mode EQ band 3 bw for control 3	Switch	2.0
Control 3 mode EQ band 3 type	Select mode EQ band 3 type for control 3	Switch	2.0
Control 3 mode EQ band 4 level	Select mode EQ band 4 level for control 3	Switch	2.0
Control 3 mode EQ band 4 frequency	Select mode EQ band 4 freq for control 3	Switch	2.0
Control 3 mode EQ band 4 bandwidth	Select mode EQ band 4 bw for control 3	Switch	2.0
Control 3 mode EQ band 4 type	Select mode EQ band 4 type for control 3	Switch	2.0
Control 3 mode EQ band 5 level	Select mode EQ band 5 level for control 3	Switch	2.0
Control 3 mode EQ band 5 frequency	Select mode EQ band 5 freq for control 3	Switch	2.0
Control 3 mode EQ band 5 bandwidth	Select mode EQ band 5 bw for control 3	Switch	2.0
Control 3 mode EQ band 5 type	Select mode EQ band 5 type for control 3	Switch	2.0
Control 3 mode EQ band 6 level	Select mode EQ band 6 level for control 3	Switch	2.0
Control 3 mode EQ band 6 frequency	Select mode EQ band 6 freq for control 3	Switch	2.0
Control 3 mode EQ band 6 bandwidth	Select mode EQ band 6 bw for control 3	Switch	2.0
Control 3 mode EQ band 6 type	Select mode EQ band 6 type for control 3	Switch	2.0
Control 3 mode module EQ on/off	Select mode EQ on/off for control 3	Switch	2.1

Function Name	Comments	Object to connect to	Version
Control 3 mode module downward expander threshold	Select mode downward expander threshold	Switch	2.1
Control 3 mode AGC threshold	Select mode AGC threshold	Switch	2.1
Control 3 mode AGC ratio	Select mode AGC ratio for control 3	Switch	2.0
Control 3 mode Dynamics on/off	Select mode Dynamics on/off for control 3	Switch	2.2
Control 3 mode mono	Select mode mono for control 3	Switch	2.0
Control 3 mode pan	Select mode pan for control 3	Switch	2.0
Control 3 mode module level	Select mode module level for control 3	Switch	2.0
Control 3 mode buss 1/2	Select mode buss 1/2 for control 3	Switch	2.0
Control 3 mode buss 1/2 balance	Select mode buss 1/2 bal. for control 3	Switch	2.0
Control 3 mode buss ¾	Select mode buss 3/4 for control 3	Switch	2.0
Control 3 mode buss 3/4 balance	Select mode buss 3/4 bal. for control 3	Switch	2.0
Control 3 mode buss 5/6	Select mode buss 5/6 for control 3	Switch	2.0
Control 3 mode buss 5/6 balance	Select mode buss 5/6 bal. for control 3	Switch	2.0
Control 3 mode buss 7/8	Select mode buss 7/8 for control 3	Switch	2.0
Control 3 mode buss 7/8 balance	Select mode buss 7/8 bal. for control 3	Switch	2.0
Control 3 mode buss 9/10	Select mode buss 9/10 for control 3	Switch	2.0
Control 3 mode buss 9/10 balance	Select mode buss 9/10 bal. for control 3	Switch	2.0
Control 3 mode buss 11/12	Select mode buss 11/12 for control 3	Switch	2.0
Control 3 mode buss 11/12 balance	Select mode buss 11/12 bal. for control 3	Switch	2.0
Control 3 mode buss 13/14	Select mode buss 13/14 for control 3	Switch	2.0
Control 3 mode buss 13/14 balance	Select mode buss 13/14 bal. for control 3	Switch	2.0
Control 3 mode buss 15/16	Select mode buss 15/16 for control 3	Switch	2.0
Control 3 mode buss 15/16 balance	Select mode buss 15/16 bal. for control 3	Switch	2.0
Control 3 mode buss 17/18	Select mode buss 17/18 for control 3	Switch	2.0
Control 3 mode buss 17/18 balance	Select mode buss 17/18 bal. for control 3	Switch	2.0
Control 3 mode buss 19/20	Select mode buss 19/20 for control 3	Switch	2.0
Control 3 mode buss 19/20 balance	Select mode buss 19/20 bal. for control 3	Switch	2.0
Control 3 mode buss 21/22	Select mode buss 21/22 for control 3	Switch	2.0
Control 3 mode buss 21/22 balance	Select mode buss 21/22 bal. for control 3	Switch	2.0
Control 3 mode buss 23/24	Select mode buss 23/24 for control 3	Switch	2.0
Control 3 mode buss 23/24 balance	Select mode buss 23/24 bal. for control 3	Switch	2.0
Control 3 mode buss 25/26	Select mode buss 25/26 for control 3	Switch	2.0
Control 3 mode buss 25/26 balance	Select mode buss 25/26 bal. for control 3	Switch	2.0
Control 3 mode buss 27/28	Select mode buss 27/28 for control 3	Switch	2.0
Control 3 mode buss 27/28 balance	Select mode buss 27/28 bal. for control 3	Switch	2.0
Control 3 mode buss 29/30	Select mode buss 29/30 for control 3	Switch	2.0
Control 3 mode buss 29/30 balance	Select mode buss 29/30 bal. for control 3	Switch	2.0
Control 3 mode buss 31/32	Select mode buss 31/32 for control 3	Switch	2.0
Control 3 mode buss 31/32 balance	Select mode buss 31/32 bal. for control 3	Switch	2.0
Control 4 mode source	Select mode source for control 4	Switch	2.0
Control 4 mode processing preset	Select mode processing preset for control 4	Switch	2.1
Control 4 mode source gain	Select mode source gain for control 4	Switch	2.0
Control 4 mode source phantom	Select mode phantom for control 4	Switch	2.1
Control 4 mode source pad	Select mode pad for control 4	Switch	2.1
Control 4 mode gain	Select mode gain for control 4	Switch	2.0
Control 4 mode phase	Select mode phase for control 4	Switch	2.0
Control 4 mode low cut	Select mode low cut for control 4	Switch	2.0
Control 4 mode Insert on/off	Select mode insert for control 4	Switch	2.2
Control 4 mode EQ band 1 level	Select mode EQ band 1 level for control 4	Switch	2.0
Control 4 mode EQ band 1 frequency	Select mode EQ band 1 freq for control 4	Switch	2.0
Control 4 mode EQ band 1 bandwidth	Select mode EQ band 1 bw for control 4	Switch	2.0

Function Name	Comments	Object to connect to	Version
Control 4 mode EQ band 1 type	Select mode EQ band 1 type for control 4	Switch	2.0
Control 4 mode EQ band 2 level	Select mode EQ band 2 level for control 4	Switch	2.0
Control 4 mode EQ band 2 frequency	Select mode EQ band 2 freq for control 4	Switch	2.0
Control 4 mode EQ band 2 bandwidth	Select mode EQ band 2 bw for control 4	Switch	2.0
Control 4 mode EQ band 2 type	Select mode EQ band 2 type for control 4	Switch	2.0
Control 4 mode EQ band 3 level	Select mode EQ band 3 level for control 4	Switch	2.0
Control 4 mode EQ band 3 frequency	Select mode EQ band 3 freq for control 4	Switch	2.0
Control 4 mode EQ band 3 bandwidth	Select mode EQ band 3 bw for control 4	Switch	2.0
Control 4 mode EQ band 3 type	Select mode EQ band 3 type for control 4	Switch	2.0
Control 4 mode EQ band 4 level	Select mode EQ band 4 level for control 4	Switch	2.0
Control 4 mode EQ band 4 frequency	Select mode EQ band 4 freq for control 4	Switch	2.0
Control 4 mode EQ band 4 bandwidth	Select mode EQ band 4 bw for control 4	Switch	2.0
Control 4 mode EQ band 4 type	Select mode EQ band 4 type for control 4	Switch	2.0
Control 4 mode EQ band 5 level	Select mode EQ band 5 level for control 4	Switch	2.0
Control 4 mode EQ band 5 frequency	Select mode EQ band 5 freq for control 4	Switch	2.0
Control 4 mode EQ band 5 bandwidth	Select mode EQ band 5 bw for control 4	Switch	2.0
Control 4 mode EQ band 5 type	Select mode EQ band 5 type for control 4	Switch	2.0
Control 4 mode EQ band 6 level	Select mode EQ band 6 level for control 4	Switch	2.0
Control 4 mode EQ band 6 frequency	Select mode EQ band 6 freq for control 4	Switch	2.0
Control 4 mode EQ band 6 bandwidth	Select mode EQ band 6 bw for control 4	Switch	2.0
Control 4 mode EQ band 6 type	Select mode EQ band 6 type for control 4	Switch	2.0
Control 4 mode module EQ on/off	Select mode EQ on/off for control 4	Switch	2.1
Control 4 mode module downward expander threshold	Select mode downward expander threshold	Switch	2.1
Control 4 mode AGC threshold	Select mode AGC threshold	Switch	2.1
Control 4 mode AGC ratio	Select mode AGC ratio for control 4	Switch	2.0
Control 4 mode Dynamics on/off	Select mode Dynamics on/off for control 4	Switch	2.2
Control 4 mode mono	Select mode mono for control 4	Switch	2.0
Control 4 mode pan	Select mode pan for control 4	Switch	2.0
Control 4 mode module level	Select mode module level for control 4	Switch	2.0
Control 4 mode buss 1/2	Select mode buss 1/2 for control 4	Switch	2.0
Control 4 mode buss 1/2 balance	Select mode buss 1/2 bal. for control 4	Switch	2.0
Control 4 mode buss 3/4	Select mode buss 3/4 for control 4	Switch	2.0
Control 4 mode buss 3/4 balance	Select mode buss 3/4 bal. for control 4	Switch	2.0
Control 4 mode buss 5/6	Select mode buss 5/6 for control 4	Switch	2.0
Control 4 mode buss 5/6 balance	Select mode buss 5/6 bal. for control 4	Switch	2.0
Control 4 mode buss 7/8	Select mode buss 7/8 for control 4	Switch	2.0
Control 4 mode buss 7/8 balance	Select mode buss 7/8 bal. for control 4	Switch	2.0
Control 4 mode buss 9/10	Select mode buss 9/10 for control 4	Switch	2.0
Control 4 mode buss 9/10 balance	Select mode buss 9/10 bal. for control 4	Switch	2.0
Control 4 mode buss 11/12	Select mode buss 11/12 for control 4	Switch	2.0
Control 4 mode buss 11/12 balance	Select mode buss 11/12 bal. for control 4	Switch	2.0
Control 4 mode buss 13/14	Select mode buss 13/14 for control 4	Switch	2.0
Control 4 mode buss 13/14 balance	Select mode buss 13/14 bal. for control 4	Switch	2.0
Control 4 mode buss 15/16	Select mode buss 15/16 for control 4	Switch	2.0
Control 4 mode buss 15/16 balance	Select mode buss 15/16 bal. for control 4	Switch	2.0
Control 4 mode buss 17/18	Select mode buss 17/18 for control 4	Switch	2.0
Control 4 mode buss 17/18 balance	Select mode buss 17/18 bal. for control 4	Switch	2.0
Control 4 mode buss 19/20	Select mode buss 19/20 for control 4	Switch	2.0
Control 4 mode buss 19/20 balance	Select mode buss 19/20 bal. for control 4	Switch	2.0

Function Name	Comments	Object to connect to	Version
Control 4 mode buss 21/22	Select mode buss 21/22 for control 4	Switch	2.0
Control 4 mode buss 21/22 balance	Select mode buss 21/22 bal. for control 4	Switch	2.0
Control 4 mode buss 23/24	Select mode buss 23/24 for control 4	Switch	2.0
Control 4 mode buss 23/24 balance	Select mode buss 23/24 bal. for control 4	Switch	2.0
Control 4 mode buss 25/26	Select mode buss 25/26 for control 4	Switch	2.0
Control 4 mode buss 25/26 balance	Select mode buss 25/26 bal. for control 4	Switch	2.0
Control 4 mode buss 27/28	Select mode buss 27/28 for control 4	Switch	2.0
Control 4 mode buss 27/28 balance	Select mode buss 27/28 bal. for control 4	Switch	2.0
Control 4 mode buss 29/30	Select mode buss 29/30 for control 4	Switch	2.0
Control 4 mode buss 29/30 balance	Select mode buss 29/30 bal. for control 4	Switch	2.0
Control 4 mode buss 31/32	Select mode buss 31/32 for control 4	Switch	2.0
Control 4 mode buss 31/32 balance	Select mode buss 31/32 bal. for control 4	Switch	2.0
Master control 1 mode buss 1/2	Select mode for Master control 1	Switch	2.0
Master control 1 mode buss 3/4	Select mode for Master control 1	Switch	2.0
Master control 1 mode buss 5/6	Select mode for Master control 1	Switch	2.0
Master control 1 mode buss 7/8	Select mode for Master control 1	Switch	2.0
Master control 1 mode buss 9/10	Select mode for Master control 1	Switch	2.0
Master control 1 mode buss 11/12	Select mode for Master control 1	Switch	2.0
Master control 1 mode buss 13/14	Select mode for Master control 1	Switch	2.0
Master control 1 mode buss 15/16	Select mode for Master control 1	Switch	2.0
Master control 1 mode buss 17/18	Select mode for Master control 1	Switch	2.0
Master control 1 mode buss 19/20	Select mode for Master control 1	Switch	2.0
Master control 1 mode buss 21/22	Select mode for Master control 1	Switch	2.0
Master control 1 mode buss 23/24	Select mode for Master control 1	Switch	2.0
Master control 1 mode buss 25/26	Select mode for Master control 1	Switch	2.0
Master control 1 mode buss 27/28	Select mode for Master control 1	Switch	2.0
Master control 1 mode buss 29/30	Select mode for Master control 1	Switch	2.0
Master control 1 mode buss 31/32	Select mode for Master control 1	Switch	2.0
Master control 2 mode buss 1/2	Select mode for Master control 2	Switch	2.0
Master control 2 mode buss 3/4	Select mode for Master control 2	Switch	2.0
Master control 2 mode buss 5/6	Select mode for Master control 2	Switch	2.0
Master control 2 mode buss 7/8	Select mode for Master control 2	Switch	2.0
Master control 2 mode buss 9/10	Select mode for Master control 2	Switch	2.0
Master control 2 mode buss 11/12	Select mode for Master control 2	Switch	2.0
Master control 2 mode buss 13/14	Select mode for Master control 2	Switch	2.0
Master control 2 mode buss 15/16	Select mode for Master control 2	Switch	2.0
Master control 2 mode buss 17/18	Select mode for Master control 2	Switch	2.0
Master control 2 mode buss 19/20	Select mode for Master control 2	Switch	2.0
Master control 2 mode buss 21/22	Select mode for Master control 2	Switch	2.0
Master control 2 mode buss 23/24	Select mode for Master control 2	Switch	2.0
Master control 2 mode buss 25/26	Select mode for Master control 2	Switch	2.0
Master control 2 mode buss 27/28	Select mode for Master control 2	Switch	2.0
Master control 2 mode buss 29/30	Select mode for Master control 2	Switch	2.0

Function Name	Comments	Object to connect to	Version
Master control 2 mode buss 31/32	Select mode for Master control 2	Switch	2.0
Master control 3 mode buss 1/2	Select mode for Master control 3	Switch	2.0
Master control 3 mode buss 3/4	Select mode for Master control 3	Switch	2.0
Master control 3 mode buss 5/6	Select mode for Master control 3	Switch	2.0
Master control 3 mode buss 7/8	Select mode for Master control 3	Switch	2.0
Master control 3 mode buss 9/10	Select mode for Master control 3	Switch	2.0
Master control 3 mode buss 11/12	Select mode for Master control 3	Switch	2.0
Master control 3 mode buss 13/14	Select mode for Master control 3	Switch	2.0
Master control 3 mode buss 15/16	Select mode for Master control 3	Switch	2.0
Master control 3 mode buss 17/18	Select mode for Master control 3	Switch	2.0
Master control 3 mode buss 19/20	Select mode for Master control 3	Switch	2.0
Master control 3 mode buss 21/22	Select mode for Master control 3	Switch	2.0
Master control 3 mode buss 23/24	Select mode for Master control 3	Switch	2.0
Master control 3 mode buss 25/26	Select mode for Master control 3	Switch	2.0
Master control 3 mode buss 27/28	Select mode for Master control 3	Switch	2.0
Master control 3 mode buss 29/30	Select mode for Master control 3	Switch	2.0
Master control 3 mode buss 31/32	Select mode for Master control 3	Switch	2.0
Master control 4 mode buss 1/2	Select mode for Master control 4	Switch	2.0
Master control 4 mode buss 3/4	Select mode for Master control 4	Switch	2.0
Master control 4 mode buss 5/6	Select mode for Master control 4	Switch	2.0
Master control 4 mode buss 7/8	Select mode for Master control 4	Switch	2.0
Master control 4 mode buss 9/10	Select mode for Master control 4	Switch	2.0
Master control 4 mode buss 11/12	Select mode for Master control 4	Switch	2.0
Master control 4 mode buss 13/14	Select mode for Master control 4	Switch	2.0
Master control 4 mode buss 15/16	Select mode for Master control 4	Switch	2.0
Master control 4 mode buss 17/18	Select mode for Master control 4	Switch	2.0
Master control 4 mode buss 19/20	Select mode for Master control 4	Switch	2.0
Master control 4 mode buss 21/22	Select mode for Master control 4	Switch	2.0
Master control 4 mode buss 23/24	Select mode for Master control 4	Switch	2.0
Master control 4 mode buss 25/26	Select mode for Master control 4	Switch	2.0
Master control 4 mode buss 27/28	Select mode for Master control 4	Switch	2.0
Master control 4 mode buss 29/30	Select mode for Master control 4	Switch	2.0
Master control 4 mode buss 31/32	Select mode for Master control 4	Switch	2.0
Master control 1	Data value of master control 1	Encoder	2.0
Master control 1 reset	Sets master control 1 to the default value	Encoder switch	2.0
Master control 2	Data value of master control 2	Encoder	2.0
Master control 2 reset	Sets master control 2 to the default value	Encoder switch	2.0
Master control 3	Data value of master control 3	Encoder	2.0
Master control 3 reset	Sets master control 3 to the default value	Encoder switch	2.0
Master control 4	Data value of master control 4	Encoder	2.0
Master control 4 reset	Sets master control 4 to the default value	Encoder switch	2.0
Reset console 1 to programmed defaults	After pressing one second, console 1 is reset to the programmed defaults	Switch	2.1
Reset console 2 to programmed defaults	After pressing one second, console 2 is reset to the programmed defaults	Switch	2.1
Reset console 3 to programmed defaults	After pressing one second, console 3 is reset to the programmed defaults	Switch	2.1

Function Name	Comments	Object to connect to	Version
Reset console 4 to programmed defaults	After pressing one second, console 4 is reset to the programmed defaults	Switch	2.1
Console preset 1	After one second recalls the preset on-air safe. After three seconds it forces the on-air channels to recall.	Switch	2.1
Console preset 2	After one second recalls the preset on-air safe. After three seconds it forces the on-air channels to recall.	Switch	2.1
Console preset 3	After one second recalls the preset on-air safe. After three seconds it forces the on-air channels to recall.	Switch	2.1
Console preset 4	After one second recalls the preset on-air safe. After three seconds it forces the on-air channels to recall.	Switch	2.1
Console preset 5	After one second recalls the preset on-air safe. After three seconds it forces the on-air channels to recall.	Switch	2.1
Console preset 6	After one second recalls the preset on-air safe. After three seconds it forces the on-air channels to recall.	Switch	2.1
Console preset 7	After one second recalls the preset on-air safe. After three seconds it forces the on-air channels to recall.	Switch	2.1
Console preset 8	After one second recalls the preset on-air safe. After three seconds it forces the on-air channels to recall.	Switch	2.1
Console preset 9	After one second recalls the preset on-air safe. After three seconds it forces the on-air channels to recall.	Switch	2.1
Console preset 10	After one second recalls the preset on-air safe. After three seconds it forces the on-air channels to recall.	Switch	2.1
Console preset 11	After one second recalls the preset on-air safe. After three seconds it forces the on-air channels to recall.	Switch	2.1
Console preset 12	After one second recalls the preset on-air safe. After three seconds it forces the on-air channels to recall.	Switch	2.1
Console preset 13	After one second recalls the preset on-air safe. After three seconds it forces the on-air channels to recall.	Switch	2.1
Console preset 14	After one second recalls the preset on-air safe. After three seconds it forces the on-air channels to recall.	Switch	2.1
Console preset 15	After one second recalls the preset on-air safe. After three seconds it forces the on-air channels to recall.	Switch	2.1
Console preset 16	After one second recalls the preset on-air safe. After three seconds it forces the on-air channels to recall.	Switch	2.1
Console preset 17	After one second recalls the preset on-air safe. After three seconds it forces the on-air channels to recall.	Switch	2.1
Console preset 18	After one second recalls the preset on-air safe. After three seconds it forces the on-air channels to recall.	Switch	2.1
Console preset 19	After one second recalls the preset on-air safe. After three seconds it forces the on-air channels to recall.	Switch	2.1
Console preset 20	After one second recalls the preset on-air safe. After three seconds it forces the on-air channels to recall.	Switch	2.1
Console preset 21	After one second recalls the preset on-air safe. After three seconds it forces the on-air channels to recall.	Switch	2.1
Console preset 22	After one second recalls the preset on-air safe. After three seconds it forces the on-air channels to recall.	Switch	2.1
Console preset 23	After one second recalls the preset on-air safe. After three seconds it forces the on-air channels to recall.	Switch	2.1
Console preset 24	After one second recalls the preset on-air safe. After three seconds it forces the on-air channels to	Switch	2.1

Function Name	Comments	Object to connect to	Version
	recall.		
Console preset 25	After one second recalls the preset on-air safe. After three seconds it forces the on-air channels to recall.	Switch	2.1
Console preset 26	After one second recalls the preset on-air safe. After three seconds it forces the on-air channels to recall.	Switch	2.1
Console preset 27	After one second recalls the preset on-air safe. After three seconds it forces the on-air channels to recall.	Switch	2.1
Console preset 28	After one second recalls the preset on-air safe. After three seconds it forces the on-air channels to recall.	Switch	2.1
Console preset 29	After one second recalls the preset on-air safe. After three seconds it forces the on-air channels to recall.	Switch	2.0
Console preset 30	After one second recalls the preset on-air safe. After three seconds it forces the on-air channels to recall.	Switch	2.0
Console preset 31	After one second recalls the preset on-air safe. After three seconds it forces the on-air channels to recall.	Switch	2.0
Console preset 32	After one second recalls the preset on-air safe. After three seconds it forces the on-air channels to recall.	Switch	2.0
Master & control 1 mode buss 1/2	Master control mode & module control mode are switched to buss 1/2	Switch	2.0
Master & control 1 mode buss 3/4	Master control mode & module control mode are switched to buss 3/4	Switch	2.0
Master & control 1 mode buss 5/6	Master control mode & module control mode are switched to buss 5/6	Switch	2.0
Master & control 1 mode buss 7/8	Master control mode & module control mode are switched to buss 7/8	Switch	2.0
Master & control 1 mode buss 9/10	Master control mode & module control mode are switched to buss 9/10	Switch	2.0
Master & control 1 mode buss 11/12	Master control mode & module control mode are switched to buss 11/12	Switch	2.0
Master & control 1 mode buss 13/14	Master control mode & module control mode are switched to buss 13/14	Switch	2.0
Master & control 1 mode buss 15/16	Master control mode & module control mode are switched to buss 15/16	Switch	2.0
Master & control 1 mode buss 17/18	Master control mode & module control mode are switched to buss 17/18	Switch	2.0
Master & control 1 mode buss 19/20	Master control mode & module control mode are switched to buss 19/20	Switch	2.0
Master & control 1 mode buss 21/22	Master control mode & module control mode are switched to buss 21/22	Switch	2.0
Master & control 1 mode buss 23/24	Master control mode & module control mode are switched to buss 23/24	Switch	2.0
Master & control 1 mode buss 25/26	Master control mode & module control mode are switched to buss 25/26	Switch	2.0
Master & control 1 mode buss 27/28	Master control mode & module control mode are switched to buss 27/28	Switch	2.0
Master & control 1 mode buss 29/30	Master control mode & module control mode are switched to buss 29/30	Switch	2.0
Master & control 1 mode buss 31/32	Master control mode & module control mode are switched to buss 31/32	Switch	2.0
Master & control 2 mode buss 1/2	Master control mode & module control mode are switched to buss 1/2	Switch	2.0
Master & control 2 mode buss 3/4	Master control mode & module control mode are switched to buss 3/4	Switch	2.0
Master & control 2 mode buss 5/6	Master control mode & module control mode are switched to buss 5/6	Switch	2.0
Master & control 2 mode buss 7/8	Master control mode & module control mode are switched to buss 7/8	Switch	2.0
Master & control 2 mode buss 9/10	Master control mode & module control mode are switched to buss 9/10	Switch	2.0
Master & control 2 mode buss 11/12	Master control mode & module control mode are switched to buss 11/12	Switch	2.0
Master & control 2 mode buss 13/14	Master control mode & module control mode are switched to buss 13/14	Switch	2.0
Master & control 2 mode buss	Master control mode & module control mode are	Switch	2.0

Function Name	Comments	Object to connect to	Version
15/16	switched to buss 15/16		
Master & control 2 mode buss 17/18	Master control mode & module control mode are switched to buss 17/18	Switch	2.0
Master & control 2 mode buss 19/20	Master control mode & module control mode are switched to buss 19/20	Switch	2.0
Master & control 2 mode buss 21/22	Master control mode & module control mode are switched to buss 21/22	Switch	2.0
Master & control 2 mode buss 23/24	Master control mode & module control mode are switched to buss 23/24	Switch	2.0
Master & control 2 mode buss 25/26	Master control mode & module control mode are switched to buss 25/26	Switch	2.0
Master & control 2 mode buss 27/28	Master control mode & module control mode are switched to buss 27/28	Switch	2.0
Master & control 2 mode buss 29/30	Master control mode & module control mode are switched to buss 29/30	Switch	2.0
Master & control 2 mode buss 31/32	Master control mode & module control mode are switched to buss 31/32	Switch	2.0
Master & control 3 mode buss 1/2	Master control mode & module control mode are switched to buss 1/2	Switch	2.0
Master & control 3 mode buss 3/4	Master control mode & module control mode are switched to buss 3/4	Switch	2.0
Master & control 3 mode buss 5/6	Master control mode & module control mode are switched to buss 5/6	Switch	2.0
Master & control 3 mode buss 7/8	Master control mode & module control mode are switched to buss 7/8	Switch	2.0
Master & control 3 mode buss 9/10	Master control mode & module control mode are switched to buss 9/10	Switch	2.0
Master & control 3 mode buss 11/12	Master control mode & module control mode are switched to buss 11/12	Switch	2.0
Master & control 3 mode buss 13/14	Master control mode & module control mode are switched to buss 13/14	Switch	2.0
Master & control 3 mode buss 15/16	Master control mode & module control mode are switched to buss 15/16	Switch	2.0
Master & control 3 mode buss 17/18	Master control mode & module control mode are switched to buss 17/18	Switch	2.0
Master & control 3 mode buss 19/20	Master control mode & module control mode are switched to buss 19/20	Switch	2.0
Master & control 3 mode buss 21/22	Master control mode & module control mode are switched to buss 21/22	Switch	2.0
Master & control 3 mode buss 23/24	Master control mode & module control mode are switched to buss 23/24	Switch	2.0
Master & control 3 mode buss 25/26	Master control mode & module control mode are switched to buss 25/26	Switch	2.0
Master & control 3 mode buss 27/28	Master control mode & module control mode are switched to buss 27/28	Switch	2.0
Master & control 3 mode buss 29/30	Master control mode & module control mode are switched to buss 29/30	Switch	2.0
Master & control 3 mode buss 31/32	Master control mode & module control mode are switched to buss 31/32	Switch	2.0
Master & control 4 mode buss 1/2	Master control mode & module control mode are switched to buss 1/2	Switch	2.0
Master & control 4 mode buss 3/4	Master control mode & module control mode are switched to buss 3/4	Switch	2.0
Master & control 4 mode buss 5/6	Master control mode & module control mode are switched to buss 5/6	Switch	2.0
Master & control 4 mode buss 7/8	Master control mode & module control mode are switched to buss 7/8	Switch	2.0
Master & control 4 mode buss 9/10	Master control mode & module control mode are switched to buss 9/10	Switch	2.0
Master & control 4 mode buss 11/12	Master control mode & module control mode are switched to buss 11/12	Switch	2.0
Master & control 4 mode buss 13/14	Master control mode & module control mode are switched to buss 13/14	Switch	2.0
Master & control 4 mode buss 15/16	Master control mode & module control mode are switched to buss 15/16	Switch	2.0
Master & control 4 mode buss 17/18	Master control mode & module control mode are switched to buss 17/18	Switch	2.0
Master & control 4 mode buss 19/20	Master control mode & module control mode are switched to buss 19/20	Switch	2.0
Master & control 4 mode buss 21/22	Master control mode & module control mode are switched to buss 21/22	Switch	2.0
Master & control 4 mode buss	Master control mode & module control mode are	Switch	2.0

Function Name	Comments	Object to connect to	Version
23/24	switched to buss 23/24		
Master & control 4 mode buss 25/26	Master control mode & module control mode are switched to buss 25/26	Switch	2.0
Master & control 4 mode buss 27/28	Master control mode & module control mode are switched to buss 27/28	Switch	2.0
Master & control 4 mode buss 29/30	Master control mode & module control mode are switched to buss 29/30	Switch	2.0
Master & control 4 mode buss 31/32	Master control mode & module control mode are switched to buss 31/32	Switch	2.0
Console 1 preset	Returns the name of the last used preset on console 1	Display	2.0
Console 2 preset	Returns the name of the last used preset on console 2	Display	2.0
Console 3 preset	Returns the name of the last used preset on console 3	Display	2.0
Console 4 preset	Returns the name of the last used preset on console 4	Display	2.0

5.16.5 Sources

Some objects have functionalities that relate to the source selected on a module. For example if you have a GPI that needs to trigger a CUE or Alert module function. In addition, a GPO can have a relation to the fader on/off of the module where its source is connected.
This group with source functions makes it possible to have source related module functionality:

Name	comments	Example object to connect to	Version
Module on	connect to the module(s) on if this source is selected	GPIO	2.0
Module off	connect to the module(s) off if this source is selected	GPIO	2.0
Module on/off	connect to the module(s) on/off if this source is selected	GPIO	2.0
Module fader on	connect to the module(s) fader on if this source is selected	GPIO	2.0
Module fader off	connect to the module(s) fader off this source is selected	GPIO	2.0
Module fader on/off	connect to the module(s) fader on/off this source is selected	GPIO	2.0
Module fader and on active	connect to the module(s) fader on and on if this source is selected	GPIO	2.0
Module fader and on inactive	connect to the module(s) fader on and on if this source is selected	GPIO	2.0
Module fader and on active/inactive	connect to the module(s) fader on and on if this source is selected	GPIO	2.2
Module buss 1/2 on	connect to the module(s) buss 1/2 on if this source is selected	GPIO	2.0
Module buss 1/2 off	connect to the module(s) buss 1/2 off if this source is selected	GPIO	2.0
Module buss 1/2 on/off	connect to the module(s) buss 1/2 on/off if this source is selected	GPIO	2.0
Module buss 3/4 on	connect to the module(s) buss 3/4 on if this source is selected	GPIO	2.0
Module buss 3/4 off	connect to the module(s) buss 3/4 off if this source is selected	GPIO	2.0
Module buss 3/4 on/off	connect to the module(s) buss 3/4 on/off if this source is selected	GPIO	2.0
Module buss 5/6 on	connect to the module(s) buss 5/6 on if this source is selected	GPIO	2.0
Module buss 5/6 off	connect to the module(s) buss 5/6 off if this source is selected	GPIO	2.0
Module buss 5/6 on/off	connect to the module(s) buss 5/6 on/off if this source is selected	GPIO	2.0
Module buss 7/8 on	connect to the module(s) buss 7/8 on if this source is selected	GPIO	2.0
Module buss 7/8 off	connect to the module(s) buss 7/8 off if this source is selected	GPIO	2.0
Module buss 7/8 on/off	connect to the module(s) buss 7/8 on/off if this source is selected	GPIO	2.0
Module buss 9/10 on	connect to the module(s) buss 9/10 on if this source is selected	GPIO	2.0
Module buss 9/10 off	connect to the module(s) buss 9/10 off if this source is selected	GPIO	2.0
Module buss 9/10 on/off	connect to the module(s) buss 9/10 on/off if this source is selected	GPIO	2.0
Module buss 11/12 on	connect to the module(s) buss 11/12 on if this source is selected	GPIO	2.0
Module buss 11/12 off	connect to the module(s) buss 11/12 off if this source is selected	GPIO	2.0
Module buss 11/12 on/off	connect to the module(s) buss 11/12 on/off if this source is selected	GPIO	2.0
Module buss 13/14 on	connect to the module(s) buss 13/14 on if this source is selected	GPIO	2.0
Module buss 13/14 off	connect to the module(s) buss 13/14 off if this source is selected	GPIO	2.0
Module buss 13/14 on/off	connect to the module(s) buss 13/14 on/off if this source is selected	GPIO	2.0
Module buss 15/16 on	connect to the module(s) buss 15/16 on if this source is selected	GPIO	2.0
Module buss 15/16 off	connect to the module(s) buss 15/16 off if this source is selected	GPIO	2.0
Module buss 15/16 on/off	connect to the module(s) buss 15/16 on/off if this source is selected	GPIO	2.0
Module buss 17/18 on	connect to the module(s) buss 17/18 on if this source is selected	GPIO	2.0

Name	comments	Example object to connect to	Version
Module buss 17/18 off	connect to the module(s) buss 17/18 off if this source is selected	GPIO	2.0
Module buss 17/18 on/off	connect to the module(s) buss 17/18 on/off if this source is selected	GPIO	2.0
Module buss 19/20 on	connect to the module(s) buss 19/20 on if this source is selected	GPIO	2.0
Module buss 19/20 off	connect to the module(s) buss 19/20 off if this source is selected	GPIO	2.0
Module buss 19/20 on/off	connect to the module(s) buss 19/20 on/off if this source is selected	GPIO	2.0
Module buss 21/22 on	connect to the module(s) buss 21/22 on if this source is selected	GPIO	2.0
Module buss 21/22 off	connect to the module(s) buss 21/22 off if this source is selected	GPIO	2.0
Module buss 21/22 on/off	connect to the module(s) buss 21/22 on/off if this source is selected	GPIO	2.0
Module buss 23/24 on	connect to the module(s) buss 23/24 on if this source is selected	GPIO	2.0
Module buss 23/24 off	connect to the module(s) buss 23/24 off if this source is selected	GPIO	2.0
Module buss 23/24 on/off	connect to the module(s) buss 23/24 on/off if this source is selected	GPIO	2.0
Module buss 25/26 on	connect to the module(s) buss 25/26 on if this source is selected	GPIO	2.0
Module buss 25/26 off	connect to the module(s) buss 25/26 off if this source is selected	GPIO	2.0
Module buss 25/26 on/off	connect to the module(s) buss 25/26 on/off if this source is selected	GPIO	2.0
Module buss 27/28 on	connect to the module(s) buss 27/28 on if this source is selected	GPIO	2.0
Module buss 27/28 off	connect to the module(s) buss 27/28 off if this source is selected	GPIO	2.0
Module buss 27/28 on/off	connect to the module(s) buss 27/28 on/off if this source is selected	GPIO	2.0
Module buss 29/30 on	connect to the module(s) buss 29/30 on if this source is selected	GPIO	2.0
Module buss 29/30 off	connect to the module(s) buss 29/30 off if this source is selected	GPIO	2.0
Module buss 29/30 on/off	connect to the module(s) buss 29/30 on/off if this source is selected	GPIO	2.0
Module buss 31/32 on	connect to the module(s) buss 31/32 on if this source is selected	GPIO	2.0
Module buss 31/32 off	connect to the module(s) buss 31/32 off if this source is selected	GPIO	2.0
Module buss 31/32 on/off	connect to the module(s) buss 31/32 on/off if this source is selected	GPIO	2.0
Module cough on/off	connect to the module(s) Cough if this source is selected	GPI	2.0
Start	Start function for the corresponding source	GPO	2.0
Stop	Stop function for the corresponding source	GPO	2.0
Start/Stop	Start function for the corresponding source	GPO	2.0
Phantom	Phantom function for the corresponding source	Phantom/GPO	2.0
Pad	PAD function for the corresponding source	Pad/GPO	2.0
Input gain	(Analog) gain for the corresponding source	Gain	2.0
Alert	Alert from the corresponding source	GPI	2.0

5.16.6 Destinations

Some objects have functionality that relates to the destination selected on a send module. For example if you have a GPI that should trigger a TB or MUTE send module function.
This group with destination functions makes it possible to have destination related send module functionality:

Name	Comments	Example object to connect to	Version
Label	Shows the name of the current destination	Display	2.0
Source	Selects the source for this destination	Encoder/Display	2.0
Monitor speaker level	If the source is a monitor buss and the speaker level is changed this destination will follow	I/O card level	2.0
Monitor phones level	If the source is a monitor buss and the phones level is changed this destination will follow	I/O card level	2.0
Level	This adjust the level of this destination	Encoder	2.0
Mute	Mutes this destination	Switch, I/O card mutes	2.0
Mute & Monitor mute	Mutes this destination if the source is a monitor buss and the monitor buss mute is activated or its local mute is set.	I/O card mutes	2.0
Dim	Dims this destination	Switch, I/O card dim	2.0
Dim & Monitor dim	Dims this destination if the source is a monitor buss and the monitor buss dim is activated or its local dim is set.	I/O card dim	2.0
Mono	Make this destination mono	Switch, I/O card mono	2.0

Name	Comments	Example object to connect to	Version
Mono & Monitor mono	Make this destination mono if the source is a monitor buss and the monitor buss mono is activated or its local mono is set.	I/O card mono	2.0
Phase	Changes phase for this destination	Switch, I/O card phase	2.0
Phase & Monitor phase	Changes phase for this destination if the source is a monitor buss and the monitor buss phase is activated or its local phase is set.	I/O card phase	2.0
Talkback 1	Do talkback to this destination	Switch, I/O card talkback 1	2.0
Talkback 1 & Monitor talkback 1	Do talkback to this destination if the source is a monitor buss and the monitor buss talkback is activated or its local talkback is set.	I/O card talkback 1	2.0
Talkback 2	Do talkback to this destination	Switch, I/O card talkback 2	2.0
Talkback 2 & Monitor talkback 2	Do talkback to this destination if the source is a monitor buss and the monitor buss talkback is activated or its local talkback is set.	I/O card talkback 2	2.0
Talkback 3	Do talkback to this destination	Switch, I/O card talkback 3	2.0
Talkback 3 & Monitor talkback 3	Do talkback to this destination if the source is a monitor buss and the monitor buss talkback is activated or its local talkback is set.	I/O card talkback 3	2.0
Talkback 4	Do talkback to this destination	Switch, I/O card talkback 4	2.0
Talkback 4 & Monitor talkback 4	Do talkback to this destination if the source is a monitor buss and the monitor buss talkback is activated or its local talkback is set.	I/O card talkback 4	2.0
Talkback 5	Do talkback to this destination	Switch, I/O card talkback 5	2.0
Talkback 5 & Monitor talkback 5	Do talkback to this destination if the source is a monitor buss and the monitor buss talkback is activated or its local talkback is set.	I/O card talkback 5	2.0
Talkback 6	Do talkback to this destination	Switch, I/O card talkback 6	2.0
Talkback 6 & Monitor talkback 6	Do talkback to this destination if the source is a monitor buss and the monitor buss talkback is activated or its local talkback is set.	I/O card talkback 6	2.0
Talkback 7	Do talkback to this destination	Switch, I/O card talkback 7	2.0
Talkback 7 & Monitor talkback 7	Do talkback to this destination if the source is a monitor buss and the monitor buss talkback is activated or its local talkback is set.	I/O card talkback 7	2.0
Talkback 8	Do talkback to this destination	Switch, I/O card talkback 8	2.0
Talkback 8 & Monitor talkback 8	Do talkback to this destination if the source is a monitor buss and the monitor buss talkback is activated or its local talkback is set.	I/O card talkback 8	2.0
Talkback 9	Do talkback to this destination	Switch, I/O card talkback 9	2.0
Talkback 9 & Monitor talkback 9	Do talkback to this destination if the source is a monitor buss and the monitor buss talkback is activated or its local talkback is set.	I/O card talkback 9	2.0
Talkback 10	Do talkback to this destination	Switch, I/O card talkback 10	2.0
Talkback 10 & Monitor talkback 10	Do talkback to this destination if the source is a monitor buss and the monitor buss talkback is activated or its local talkback is set.	I/O card talkback 10	2.0
Talkback 11	Do talkback to this destination	Switch, I/O card talkback 11	2.0
Talkback 11 & Monitor talkback 11	Do talkback to this destination if the source is a monitor buss and the monitor buss talkback is activated or its local talkback is set.	I/O card talkback 11	2.0
Talkback 12	Do talkback to this destination	Switch, I/O card talkback 12	2.0
Talkback 12 & Monitor talkback 12	Do talkback to this destination if the source is a monitor buss and the monitor buss talkback is activated or its local talkback is set.	I/O card talkback 12	2.0
Talkback 13	Do talkback to this destination	Switch, I/O card talkback 13	2.0
Talkback 13 & Monitor talkback 13	Do talkback to this destination if the source is a monitor buss and the monitor buss talkback is activated or its local talkback is set.	I/O card talkback 13	2.0
Talkback 14	Do talkback to this destination	Switch, I/O card talkback 14	2.0
Talkback 14 & Monitor talkback 14	Do talkback to this destination if the source is a monitor buss and the monitor buss talkback is activated or its local talkback is set.	I/O card talkback 14	2.0
Talkback 15	Do talkback to this destination	Switch, I/O card talkback 15	2.0
Talkback 15 & Monitor talkback 15	Do talkback to this destination if the source is a monitor buss and the monitor buss talkback is activated or its local talkback is set.	I/O card talkback 15	2.0
Talkback 16	Do talkback to this destination	Switch, I/O card talkback 16	2.0
Talkback 16 & Monitor talkback 16	Do talkback to this destination if the source is a monitor buss and the monitor buss talkback is activated or its local talkback is set.	I/O card talkback 16	2.0

Name	Comments	Example object to connect to	Version
Routing	Makes it possible to select which channels are going to this destination. The options are Left, Right, Stereo	Encoder, Display	2.1

6 Block diagrams – NOT AVAILABLE

With all configuration options, it is possible to make many different systems using a single I/O rack. We will show some example block diagrams on possible setups within an Oxygen 5 Digital system.

32 stereo module, 16 stereo buss and 4 stereo monitor buss console:

Note:
These diagrams will follow in future manuals, sorry

7 I/O Rack description

The Oxygen 5 Digital audio system has a 19" rack (for 21 slots) that requires at least one power supply (3 slots) and one engine card (2 slots). You then have space for a maximum of 16 in and output cards. Because the Oxygen 5 Digital is a modular system it is up to you how many in and output cards are necessary to do the job.

For the connections, we use standard RJ45; an example for other connectors is ADAT that uses the well-known ADAT optical connector. Connection between de RJ45s in the rack and your patch units is by standard STP (Shielded Twisted Pair) cable.

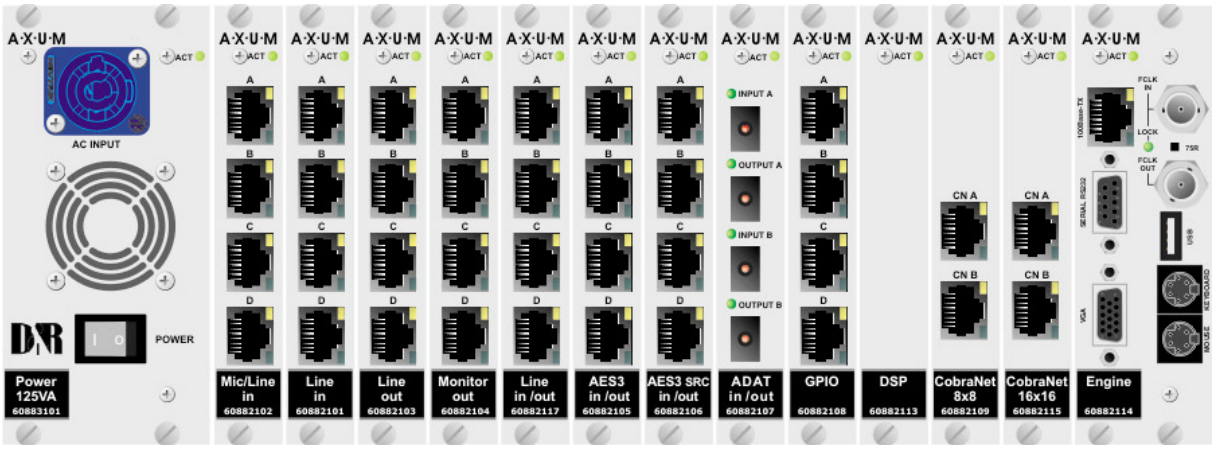
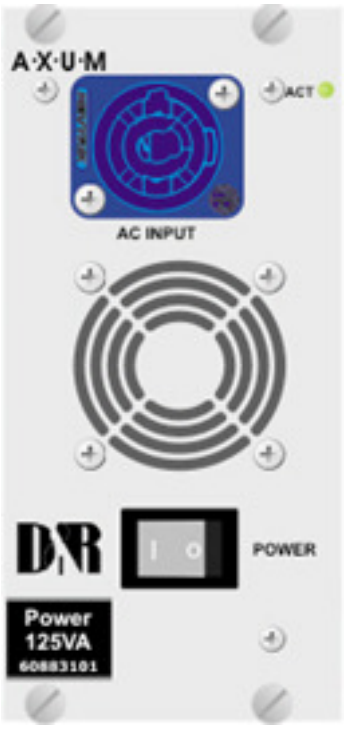


Figure 27: Oxygen 5 Digital Digital audio system 19" Rack

7.1 Power supply



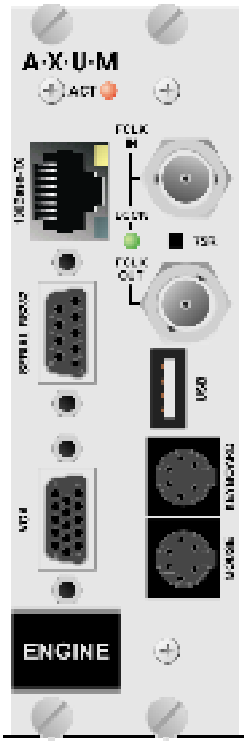
At the far left position in the I/O RACK is the position where the power supply Card is inserted; an optional second power supply card can be inserted alongside this first one. With two power supplies, you have created automatic power supply redundancy.

The LED will blink green to show the power supply is up and running. At failure of the local power, this LED activity will blinking red or not blinking at all.

The NEUTRIK™ PowerCON™ will feed to 100-240V power to the supply.
With the power switch you can turn off the local power supply.

WARNING:
Before you insert a second power supply please turn on the power of this second unit first to make sure you will not short the internal power-lines.

7.2 Engine



The engine is the controller card of the Oxygen 5 Digital system. This card has a fixed location at the far right side. For proper functioning of the system, you absolutely have to insert this card to your digital audio systems network.

The RJ45 is a default 100Mbit Ethernet port and over this network connection, the following information is send:

- MambaNet: control protocol
- HTTP: Configuration of your engine via web server
- FTP: Firmware/configuration update and backup via a file server.

Currently, the serial RS232, VGA, Keyboard, mouse and USB connection can be used for service purposes only.

Via the BNC connectors you synchronize this entire rack to an external frame clock as well as to remote equipment with the clock of this 19"rack.
With the 75R switch, you can turn on/off a 75-Ohm termination on the receiving frame clock connector.

The ACT(ive) LED will blink to show proper functioning of the Engine card.

On the next page, you find the pin information for all the connectors:

Pin	Pin name	Function	Comment
1	Centre	Frame Clock in	32kHz, 44.1kHz, 48kHz, +/- 100ppm, +5V TTL, switchable 75Ohm terminator.
GND	GND	Ground Frame Clock in	

Table 7-1: Frame clock input BNC

Pin	Pin name	Function	Comment
1	Centre	Frame Clock Out	32kHz, 44.1kHz, 48kHz, +5V TTL, imp.: 75Ohm
GND	GND	Ground Frame Clock out	

Table 7-2: Frame clock output BNC

Pin	Pin name	Function	Comment
1	Red	Red Video Out	Red Video
2	Green	Green Video Out	Green Video
3	Blue	Blue Video Out	Blue Video
4	nc		
5	GND Hsync	GND Horizontal Sync	
6	Red_RTN	Red Video Return	Red Video
7	Green_RTN	Green Video Return	Green Video
8	Blue_RTN	Blue Video Return	Blue Video
9	+5V	Power DDC	DCC
10	GND	GND (Vsync, DCC)	Ground
11	nc		
12	DDDA	Data DDC	DCC
13	Hsync	Horizontal Sync	Horizontal Sync
14	Vsync	Vertical Sync	Vertical Sync
15	DDCK	CLK DDC	DCC
S	Shield	Ground	

Table 7-3: VGA 15p D-Sub connector

Pin	Pin name	Function	Comment
1	KB Data	Keyboard/Mouse Data	Keyboard/Mouse Connection
5	KB CLK	Keyboard/Mouse CLK	
2			not connected
6			
4	PWR	+5V Power	Power Connection
3	GND	Ground	
S	Shield	Ground	Ground

Table 7-4: Keyboard & Mouse mini DIN connector

Pin	Pin name	Function	Comment
1a/b	VBUS	+5V Power	Supply power
2a/b	nUSB	USB Data outface	USB
3a/b	USB	USB Data inface	
4a/b	GND	Ground	Ground
S	Shield	Ground	Ground

Table 7-5: USB connector (2x)

Pin	Pin name	Function
1	DCD	Carrier Detect
6	DSR	Data Set Ready
2	RD	Receive Data
7	RTS	Request To Send
3	TD	Transmit Data
8	CTS	Clear To Send
4	DTR	Data Terminal Ready
9	RI	Ring Indicator
5	GND	Ground
S	Shield	Ground

Table 7-6: RS232 9pin SUB-D connector

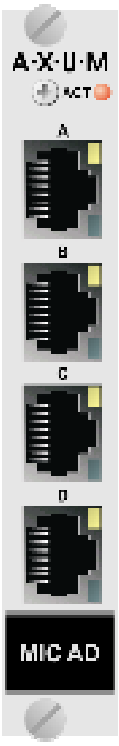
Pin	Con.	Pair	Pin name	Function	Comment
1	1A	1	TX +	Ethernet	Ethernet TX 10/100BASE-T
2	1B		TX -	Ethernet	
3	2A	2	RX+	Ethernet	Ethernet RX 10/100BASE-T
6	2B		RX-	Ethernet	
5	3A	3	NC		
4	3B		NC		
7	4A	4	NC		
8	4B		NC		
S	GND	S	Shield	GND	Ground

Table 7-7: Ethernet RJ45 connection

8 Available I/O rack cards

Depending on your audio-connections, you can select the I/O cards.
The next paragraphs will give you a detailed overview on the currently available cards.

8.1 MIC input card



There are four balanced MIC inputs available on each card.
Each RJ45 connector represents a MIC input and two GPIO's which can be connected to the 19" patch panels with a shielded twisted pair (STP) cable.

On each MIC input you can individual activate the +48V phantom power and PAD.

For each GPIO you can choose, by way of a hardware jumper on de board, between TTL Input/Output or Photo-MOS relay output see chapter 9.3.1 GPIO TTL/Relay selection

Pin	Con.	Pair	Pin name	Function	Comment
1	1A	1	+Audio 1	MIC input in-phase	Imp. 2kΩ max. level +20dBu
2	1B		-Audio 1	MIC input out-phase	
3	2A	2	+Audio 2	not used	
6	2B		-Audio 2	not used	
5	3A	3	GPIO1a	TTL in/out or relay out, see 9.3.1	
4	3B		GPIO1b		
7	4A	4	GPIO2a	TTL in/out or relay out, see 9.3.1	
8	4B		GPIO2b		
S	GND	S	Shield	GND	Audio ground and reference for GP-In

Table 8-1: MIC RJ45 connection

8.2 Line input card

There are four balanced stereo line inputs available on each card.
Each RJ45 connector represents a stereo line input and two GPIO's which can be connected to the 19" patch panels with a shielded twisted pair (STP) cable.

For each GPIO you can choose, by way of a hardware jumper on de board, between TTL Input/Output or Photo-MOS relay output see chapter 9.3.1 GPIO TTL/Relay selection

Pin	Con.	Pair	Pin name	Function	Comment
1	1A	1	+Audio 1	Left line input in-phase	Imp. 20kΩ max. level +26dBu
2	1B		-Audio 1	Left line input out-phase	
3	2A	2	+Audio 2	Right line input in-phase	Imp. 20kΩ max. level +26dBu
6	2B		-Audio 2	Right line input out-phase	
5	3A	3	GPIO1a	TTL in/out or relay out, see 9.3.1	
4	3B		GPIO1b		
7	4A	4	GPIO2a	TTL in/out or relay out, see 9.3.1	
8	4B		GPIO2b		
S	GND	S	Shield	GND	Audio ground and reference for GP-In

Table 8-2: Line input RJ45 connection

8.3 Digital in/output card (optional SRC)

There are four balanced digital inputs and outputs available on each card.
Each RJ45 connector represents a stereo line input and two GPIO's which can be connected to the 19" patch panels with a shielded twisted pair (STP) cable.

There is also a card available with built in sample rate converters (SRC).

For each GPIO you can choose, by way of a hardware jumper on de board, between TTL Input/Output or Photo-MOS relay output see chapter 9.3.1 GPIO TTL/Relay selection

Pin	Con.	Pair	Pin name	Function	Comment
1	1A	1	+Audio 1	Digital input in-phase	Imp. 110Ω/75Ω optional SRC: 32..96kHz
2	1B		-Audio 1	Digital input out-phase	
3	2A	2	+Audio 2	Digital output in-phase	Imp. 110Ω/75Ω 32, 44.1, 48kHz
6	2B		-Audio 2	Digital output out-phase	
5	3A	3	GPIO1a	TTL in/out or relay out, see 9.3.1	
4	3B		GPIO1b		
7	4A	4	GPIO2a	TTL in/out or relay out, see 9.3.1	
8	4B		GPIO2b		
S	GND	S	Shield	GND	Audio ground and reference for GP-In

Table 8-3: Digital input/output RJ45 connection

With jumper on the I/O card it is possible to select the impedance for S/P-DIF (75Ω) or AES-3 (110 Ω)
This figures shows the jumper location on the I/O card

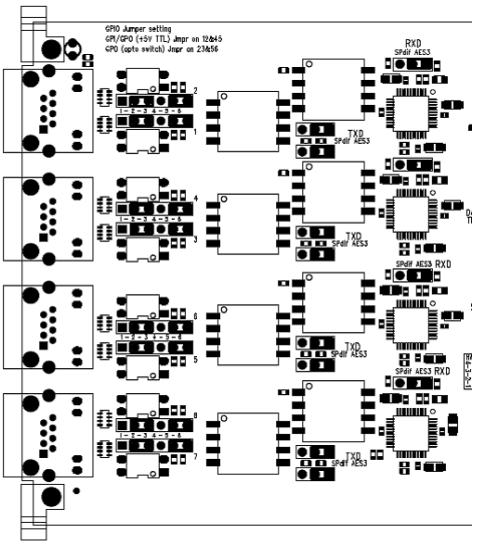
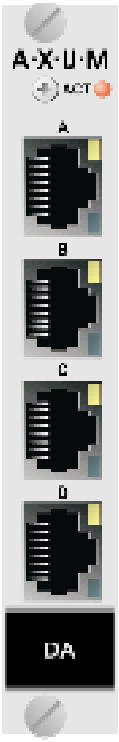


Figure 28: Digital S/P-DIF or AES3 selection

8.4 Line output card



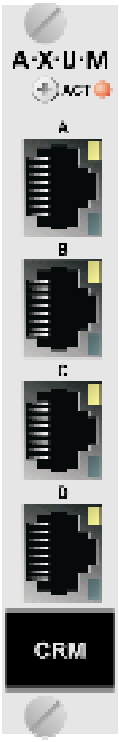
There are four balanced stereo line outputs available on each card.
Each RJ45 connector represents a stereo line output and two GPIO's which can be connected to the 19" patch panels with a shielded twisted pair (STP) cable.

For each GPIO you can choose, by way of a hardware jumper on de board, between TTL Input/Output or Photo-MOS relay output see chapter 9.3.1 GPIO TTL/Relay selection

Pin	Con.	Pair	Pin name	Function	Comment
1	1A	1	+Audio 1	Left line output in-phase	Imp. 56Ω max. level +26dBu
2	1B		-Audio 1	Left line output out-phase	
3	2A	2	+Audio 2	Right line output in-phase	Imp. 56Ω max. level +26dBu
6	2B		-Audio 2	Right line output out-phase	
5	3A	3	GPIO1a	TTL in/out or relay out, see 9.3.1	
4	3B		GPIO1b		
7	4A	4	GPIO2a	TTL in/out or relay out, see 9.3.1	
8	4B		GPIO2b		
S	GND	S	Shield	GND	Audio ground and reference for GP-In

Table 8-4: Line output RJ45 connection

8.5 CRM output card



There are four stereo outputs available on this card. RJ45 connector A&B represents the CRM stereo line output. RJ45 connector C&D represents the stereo phones outputs. Each RJ45 connector has also two GPIO's which can be connected to the 19" patch panels with a shielded twisted pair (STP) cable.

This stereo output card has some special functions:

- Analog level and mute functionality.
- Headphone amplifiers.

RJ45 A is stereo balanced output 1
RJ45 B is stereo balanced output 2
RJ45 C is stereo headphone output 3&4
RJ45 D is stereo headphone output 3&4

For each GPIO you can choose, by way of a hardware jumper on de board, between TTL Input/Output or Photo-MOS relay output see chapter 9.3.1 GPIO TTL/Relay selection

Pin	Con.	Pair	Pin name	Function	Comment
1	1A	1	+Audio 1	Left line output in-phase	Imp. 56Ω max. level +20dBu
2	1B		-Audio 1	Left line output out-phase	
3	2A	2	+Audio 2	Right line output in-phase	Imp. 56Ω max. level +20dBu
6	2B		-Audio 2	Right line output out-phase	
5	3A	3	GPIO1a	TTL in/out or relay out, see 9.3.1	
4	3B		GPIO1b		
7	4A	4	GPIO2a	TTL in/out or relay out, see 9.3.1	
8	4B		GPIO2b		
S	GND	S	Shield	GND	Audio ground and reference for GP-In

Table 8-5: CRM output RJ45 connection (A&B)

Pin	Con.	Pair	Pin name	Function	Comment
1	1A	1	+Audio 1	Left phones 1 output	Imp. 5Ω minimal phones imp. 32Ω
2	1B		-Audio 1	Right phones 1 output	
3	2A	2	+Audio 2	Left phones 2 output	Imp. 5Ω minimal phones imp. 32Ω
6	2B		-Audio 2	Right phones 2 output	
5	3A	3	GPIO1a	TTL in/out or relay out, see 9.3.1	
4	3B		GPIO1b		
7	4A	4	GPIO2a	TTL in/out or relay out, see 9.3.1	
8	4B		GPIO2b		
S	GND	S	Shield	GND	Audio ground and reference for GP-In

Table 8-6: Phones RJ45 connection (C&D)

8.6 CobraNet in/output card

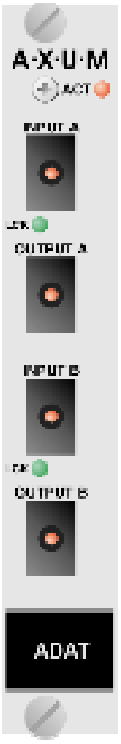
This CobraNet In/output card converts the CobraNet network signals into digital audio so it can be processed in the Oxygen 5 Digital system's 19" inch rack.

The CobraNet In/out card can ordered with various channel counts, please contact your sales contact for the available options.

Pin	Con.	Pair	Pin name	Function	Comment
1	1A	1	TX +	Ethernet	Ethernet TX 10/100BASE-T
2	1B		TX -	Ethernet	
3	2A	2	RX+	Ethernet	Ethernet RX 10/100BASE-T
6	2B		RX-	Ethernet	
5	3A	3	NC		
4	3B		NC		
7	4A	4	NC		
8	4B		NC		
S	GND	S	Shield	GND	Ground

Table 8-7: CobraNet RJ45 (Ethernet) connection.

8.7 ADAT in/output card



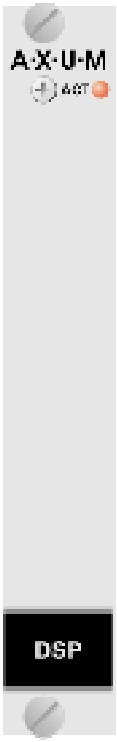
This ADAT In/output card converts the ADAT optical signals into digital audio that can received by the 19" inch rack.

The ADAT card has to run synchronous with the connected devices, allowed sample rate frequencies are 32kHz, 44.1kHz or 48kHz.

8.8 Hybrid in/output card – Needs to be added

8.9 Firewire in/output card – Needs to be added

8.10 DSP card



The DSP card adds mixing capabilities to your 19" rack. In combination with the Oxygen 5 Digital engine, this card gives you 32 stereo processing channels to create a mixing desk. The system may be loaded with four DSP cards, which generates a mixing console with 128 stereo channels.

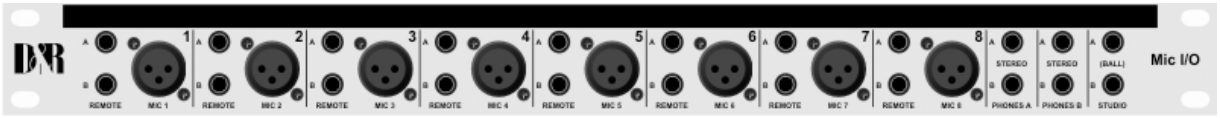
The ACT(ive) LED blinks when this card functions properly.

9 Patch panels

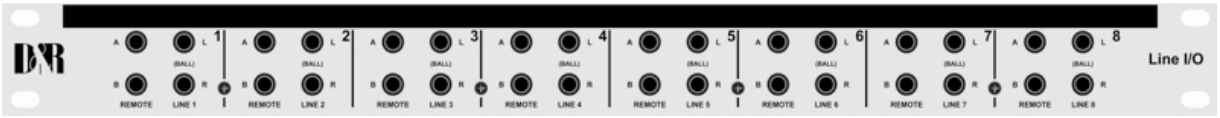
All distribution of audio within the Oxygen 5 Digital audio system is with shielded twisted pair cable. The Breakout 19" panels, you need to connect equipment use standard audio connectors.

9.1 19" Patch panels / Breakout panels

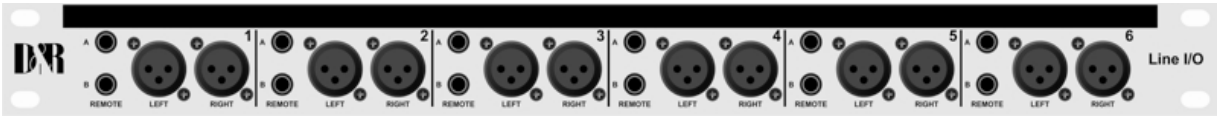
The Oxygen 5 Digital 19" Break out patch panels convert the RJ45 Shielded connection to the industry standard connectors such as XLR and Jack. There are various patch panels available for the Oxygen 5 Digital for example:



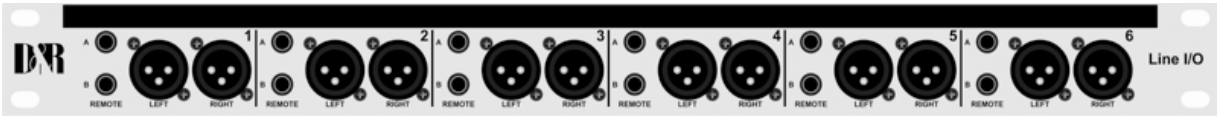
60882045, The MIC I/O with 8 MIC XLR, 16 remote jacks, 4 stereo phone jacks, 2 Line out jacks.



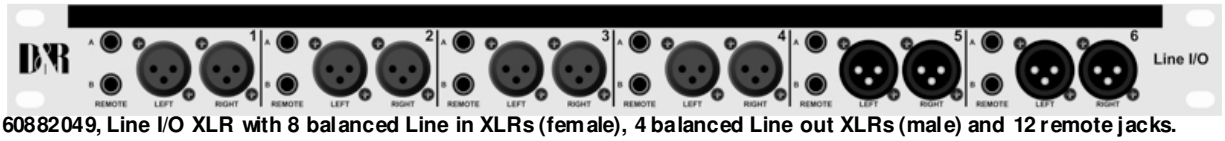
60882046, Line I/O jack with 16 balanced Line in/out jack and 16 remote jacks.



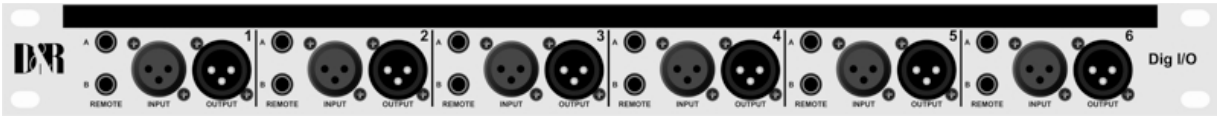
60882047, Line input XLR with 12 balanced Line in XLRs (female) and 12 remote jacks.



60882048, Line output XLR with 12 balanced Line out XLRs (male) and 12 remote jacks.



60882049, Line I/O XLR with 8 balanced Line in XLRs (female), 4 balanced Line out XLRs (male) and 12 remote jacks.



60882050, Dig I/O with 6 stereo digital inputs and 6 stereo digital outputs.

Figure 29: Oxygen 5 Digital Break out Panels

9.2 Wiring

9.2.1 GPIO/Remote

The remote jack connects to all kinds of remote in-/outputs. Such as remote start/stop, external red lights or cough. The function of the remote jack depends on the I/O card and function setup for this GPIO. The software determines its function and where it is connected to.

! NEVER CONNECT HIGH POWER VOLTAGE (WALL POWER) TO THE REMOTE-JACK !

If the GPIO jumper setting on the Oxygen 5 Digital-Rack-Board is set for GPO the remote becomes only a Remote-Output by a build in Solid State Relay. The relay is situated between Tip and Ring of the remote jack.
Normally the GPIO jumper setting on the Oxygen 5 Digital-Rack-boards are set for GPO.

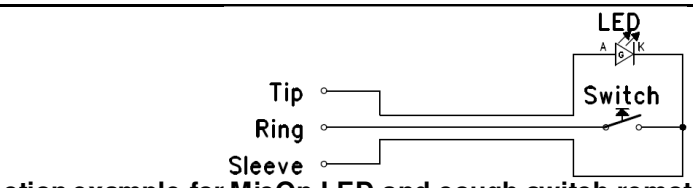
Jack	Name	function	Comment
	Tip	GP-CC	GPIO Jumper 23 & 56: Photo MOS relay (max 50V, 200mA)
	Ring	GP-NO	
	Slave	Shield	Ground

Table : GPO Patch Panel wiring

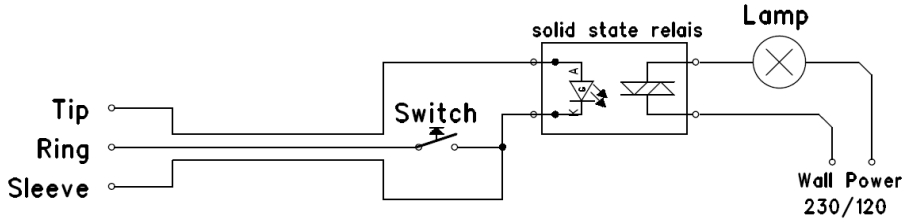
If the GPIO jumper setting on the Oxygen 5 Digital-rack-Board is set for GPIO the remote becomes a Remote-Output GPO (+5V TTL) on the Tip of the remote jack and a Remote-Input GPI (+5V TTL internal pull-up) on the Ring. The Sleeve is Shield and the ground for the TTL signal.

Jack	Name	function	Comment
	Tip	GP-Output	GPIO Jumper 12 & 45: GPO: +5V, 560R Ohm GPI: max. +5V with 10k internal pull-up.
	Ring	GP-Input	
	Slave	Shield	Ground

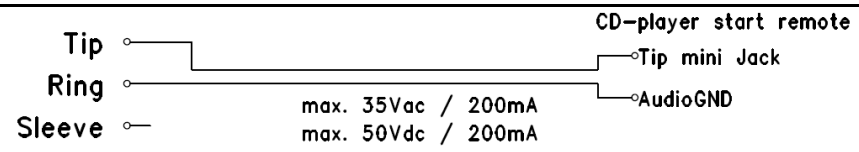
Table : GPIO Patch Panel wiring



GPIO connection example for MicOn-LED and cough-switch remote.



GPIO connection example for OnAir-Lamp and TB-Switch remote.



GPO connection example for remote START Pioneer CD-player.

9.2.2 MIC

The MIC input connects microphones to the Oxygen 5 Digital. The Oxygen 5 Digital Mic Rack Module supports 48 volts DC phantom power if it is switched on in the software.

Female XLR	Pin	Function	Comment
	2	+Audio	Audio in phase
	3	–Audio	Audio out phase
	1	Shield	Ground

Table 9-1: MIC patch panel XLR wiring

9.2.3 Phones

The Phones jacks connect headphones to the Oxygen 5 Digital console. The PHONES-A and PHONES-B female jack outputs all carry a stereo headphones signal. The phones connection connects to the CRM-DA module.

Jack	Name	Function
	Tip	Audio left
	Ring	Audio right
	Slave	Shield

Table 9-2: Phones patch panel jack wiring

9.2.4 Stereo line input and output

The line I/O jack patch panel houses female jack connecters, the line I/O XLR patch panel houses XLR type connectors (male or female).

Female XLR	Male XLR	Name	Function	Pinning
		2	+Audio	Audio in phase
		3	-Audio	Audio out phase
		1	Shield	Ground

Table 9-3: Line I/O patch panel XLR wiring

9.3 Standard RJ45 wiring

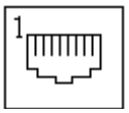


Figure 30: RJ45 Connector

	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Shield
RJ45 name	1A	1B	2A	3B	3A	2B	4A	4B	S
Ball	Left (Hot)	Left (Cold)	Right (Hot)	GPIO1	GPIO1	Right (Cold)	GPIO2	GPIO2	Shield
Phones	Left 1	Right 1	Left 2			Right 2			

Table 9-4: Standard RJ45 wiring

9.3.1 GPIO TTL/Relay selection

Each RJ45 connection on I/O cards handles audio signals and GPIOs.
The GPIO pins can be configured to work as:

- TTL in and out
  this is selected by GPIO1 jumpers in the place 12 and GPIO2 jumpers in place 45. These jumpers are located on the I/O cards, close to the RJ45 connectors.

Pin	Con.	Pair	Pin name	Function	Comment
1	1A	1	+Audio 1	Left audio input or output in-phase	Imp. 2k Ohm
2	1B		-Audio 1	Left audio input or output out-phase	max. level +20dBu
3	2A	2	+Audio 2	Right audio input or output in-phase	Imp. 2k Ohm
6	2B		-Audio 2	Right audio input or output out-phase	max. level +20dBu
5	3A	3	GPIO1a	GP-Out	+5V TTL out, 560R
4	3B		GPIO1b	GP-In	+5V TTL in, 10kR int. pull-up
7	4A	4	GPIO2a	GP-Out	+5V TTL out, 560R
8	4B		GPIO2b	GP-In.	+5V TTL in, 10kR int. pull-up
S	GND	S	Shield	GND	Audio ground and reference for GP-In

Table 9-5: RJ45 pinning in GPIO-TLL mode

- Relay out (no input available).
  this is selected by GPIO1 jumpers in the place 23 and GPIO2 jumpers in place 56. These

jumpers are located on the I/O cards, close to the RJ45 connectors.

Pin	Con.	Pair	Pin name	Function	Comment
1	1A	1	+Audio 1	Left audio input or output in-phase	specifications depends on I/O card
2	1B		-Audio 1	Left audio input or output out-phase	
3	2A	2	+Audio 2	Right audio input or output in-phase	specifications depends on I/O card
6	2B		-Audio 2	Right audio input or output out-phase	
5	3A	3	GPIO1a	Relay, connecting a&b	Photo MOS relay Bidirectional Max. 50V, 200mA
4	3B		GPIO1b		
7	4A	4	GPIO2a	Relay, connecting a&b	Photo MOS relay Bidirectional Max. 50V, 200mA
8	4B		GPIO2b		
S	GND	S	Shield	GND	Audio ground and reference for GP-In

Table 9-6: RJ45 pinning in GPO-Relay mode

The figure shows how the jumper selection on the I/O card looks:

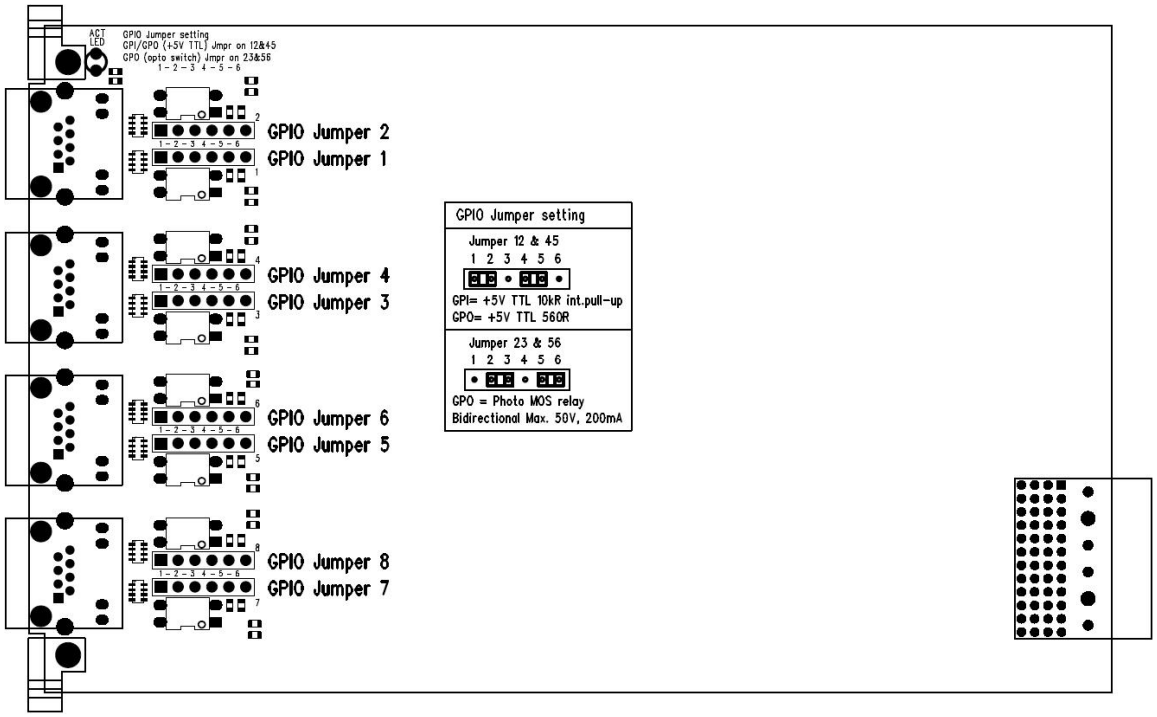

ACT LED
GPIO Jumper setting
GPI/GPO (+5V TTL) Jmpr on 12&45
GPO (opto switch) Jmpr on 23&56
1 - 2 - 3 4 - 5 - 6
GPIO Jumper 2
GPIO Jumper 1
GPIO Jumper 4
GPIO Jumper 3
GPIO Jumper 6
GPIO Jumper 5
GPIO Jumper 8
GPIO Jumper 7
GPIO Jumper setting
Jumper 12 & 45
1 2 3 4 5 6
GPI= +5V TTL 10kR int.pull-up
GPO= +5V TTL 560R
Jumper 23 & 56
1 2 3 4 5 6
GPO = Photo MOS relay
Bidirectional Max. 50V, 200mA

Figure 31: GPIO TTL/Relay jumper selection

9.4 Sico breakout box

The Oxygen 5 Digital SiCo (SIgnal COmmunication) breakout box is the communication interface between the control room and the announcer or guest. It has a built in headphones amp, a remote connection to be wired to the related Oxygen 5 Digital channel, and a very convenient CHOUGH/COMMUNICATION button and indicator.

The AUDIO INPUT 1/2 RJ45 connector on the SiCo breakout box connects to one of the Oxygen 5 Digital phones outputs directly. The CRM and Studio I/O card both have 2 phones outputs which both output the PHONES 1/A and PHONES 2/B signal. Jumpers in the SiCo breakout box select which signal is to pass on to the unit. If the Sico breakout box cannot be connected to the Oxygen 5 Digital by means of RJ45 cabling the AUDIO INPUT stereo jack of the unit can be connected to a phones output on one of the Oxygen 5 Digital patch panels.

Both RJ45 THRU connectors on the SiCo breakout box are in parallel to the input connectors to simplify wiring if more than one unit is used.

10 Specifications Oxygen 5 Digital audio system

10.1 Input/Output cards

Mic inputs : Electronically balanced
: Input impedance 2k Ohm
: Input sensitivity -70dBu up to +20dBu (PAD)
: CMRR MIC inputs: 85dB @ 1kHz, maximum gain
: Phantom is switchable +48 Volts
: Optional is transformer balancing

Line inputs : Electronically balanced
: Input impedance 10k Ohm
: input sensitivity +6dBu, maximum input +26dBu (+/- 20dB gain range).
: CMRR Line inputs: 30dB @ 1 kHz, maximum gain
: Transformer balancing is optional on the patch panels

Line Outputs : Electronically balanced
: Output impedance 56R Ohm.
: Nominal output level +6dBu, maximum output +26dBu
: Optional is transformer balancing

Digital Inputs : AES/EBU (AES3) or S/P-DIF
: 16/20/24 bit, 32kHz to 96kHz (optional built in sample rate converter)
: Input Impedance: 110R Ohm/75R Ohm

Digital outputs: AES/EBU (AES3) or S/P-DIF.
: 16/20/24 bit, 32kHz to 48kHz
: Output level: 2 to 5 volt
: Output Impedance: 110R Ohm/75R Ohm

GPIOs : All GPO's are by opto isolated relays able to handle a maximum of 50V at 200mA
: All GPI's have a 5V TTL 100kOhm circuitry
: GPIO-MIC has a 5V/600Ohm LED driver circuit

10.2 DSP processing

6 Bands EQ : +/- 18 dB, 20 – 20000 Hz, 0.1Q – 10Q LPF, LShelf, Peaking, HSelf, HPF, BPF, Notch

Dynamics : Mentioned for voice processing use, you can setup the downward expander threshold
: AGC threshold and ratio of working of the AGC.

10.3 OVERALL

Level : 0dBu = 0.775Vrms
: 0dB internal = -20 dBFs.

Clock : Sample rate: 32 kHz, 44.1 kHz, 48 kHz, +/- 20ppm (internally synchronized)

Frequency response : 20 - 20.000 Hz +/- 0.2dB
THD+N : <-96dBfs
Dynamic Range : typically 105dB
Crosstalk : less than -90dBr
Noise : -86dBr

Power supply : Neutrik™ PowerCon™ (delivered in the package).
: 100-240 Volt, 50/60Hz (1.7A Max)

10.4 DIMENSIONS

FRAME-10
Outside : 492 x 410 x 60/90mm
Drop through : 486 x 430mm
Weight : 10kg

FRAME-14
Outside : 684 x 410 x 60/90mm
Drop through : 678 x 430mm
Weight : 15kg

FRAME-18
Outside : 876 x 410 x 60/90mm
Drop through : 870 x 430mm
Weight : 20kg

FRAME-22
Outside : 1062 x 410 x 60/90mm
Drop through : 1056 x 430mm
Weight : 25kg

FRAME-26
Outside : 1260 x 410 x 60/90mm
Drop through : 1254 x 430mm
Weight : 30kg

RACK-ONE
Outside : 483 x 133 x 260mm

RACK-TWO
Outside : 483 x 266 x 260mm

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13 Declaration Of Conformity

DECLARATION OF CONFORMITY

Manufacturers Name: **Axel Technology Srl**

Manufacturers Address: **via Caduti di Sabiuno, 6/F**
40011 Anzola dell'Emilia
(Bologna) Italy

Declares that the product

Oxygen 5 Digital audio system

conforms to the following product specifications:

EMC:	NEN-EN 55103-1	**1995**
	NEN-EN 55103-2	**1995**
	NEN-EN 55013-1	**1994**

Supplementary Information:

The product herewith complies with the requirements of the EMC Directive 89/336/EEC (1989) as amended by the CE Marking Directive 93/68/EEC (1993).

Axel Technology Srl

via Caduti di Sabiuno, 6/F
40011 Anzola dell'Emilia
(Bologna) Italy

14 Product Safety

This product is been manufactured with the highest standards and is double-checked in our quality control department for reliability in the "HIGH VOLTAGE" section.

CAUTION

- **Never remove any panels, or open this equipment.**
- **No user serviceable parts inside.**
- **Equipment power supply must be grounded at all times.**
- **Only use this product as described, in user manual or brochure.**
- **Do not operate this equipment in high humidity or expose it to water or other liquids.**
- **Check the AC power supply cable to assure secure contact.**
- **Have your equipment checked yearly by a qualified dealer service center.**
- **Hazardous electrical shock can be avoided by carefully following the above rules.**

PLEASE READ THE FOLLOWING INFORMATION VERY CAREFULLY

Voltage and current cause an electrical shock. In practice the higher the voltage the higher the current will be and the higher the shock. However, there is another thing to consider and that is resistance. When the resistance in Ohms is high between two poles, the current will be low and visa versa. All three of these; voltage, current and resistance are important in determining the effect of an electrical shock.

The severity of a shock is caused by the amount of current flowing through a person.

A person can feel a shock because the muscles in a body respond to electric current. Current can also be fatal when it causes the chest muscles to contract and stop breathing.

At what potential is current dangerous? Well the first feeling of current is a tingle at 0.001 Amp of current. The current between 0.1 Amp and 0.2 Amp is fatal.

Imagine that your home fuses of 16 Amp can handle 200 times more current than is necessary to kill. How does resistance affect the shock a person feels? A typical resistance between your two hands "dry" condition could be well over 100,000 Ohm. But if your body is transpiring extensively your body resistance is lowered by more than 50%. This is a situation in which current can easily flow.

Always earth all your equipment by the grounding pin in your main plug. Proper wiring and isolation input/output transformers should only cure hum loops.

Always replace fuses with the same type and rating after the equipment has been turned off and unplugged. If the fuse blows again you have an equipment failure. Do not use it again and return it to your dealer for repair.

And last but not least be careful not to touch a person being shocked as you, yourself could also be shocked. Once removed from the shock, have someone send for medical help immediately!

Always keep the above-mentioned information in mind when using electrically powered equipment.

15 Disclaimer

Due to a policy of continuous product improvement, Axel Technology reserves the right to change specifications, appearance and performance without prior notice.

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16 Appendix A - Network design for Oxygen 5 Digital

The platform Oxygen 5 Digital design is according to the OSI-Model and makes use of protocols on different levels. It is important to understand the philosophy on the different levels in networking and the way the Oxygen 5 Digital implemented this.

With this knowledge, you can make an advanced network setup within your studio(s) give you possibilities for:

- Remote configuration
- Remote service
- Connecting multiple Oxygen 5 Digital racks to internet.
- Secure working within office-networks.

16.1 Network levels

Most of the people are aware of IP addresses. IP stands for 'Internet Protocol' and is in the OSI-Model called a 'level 3' protocol. In smaller office-networks, you only have to care about this 'level 3' (so IP).

The LAN connections (Local Area Network) normally use the Ethernet technology. Where the Ethernet is called a 'level 2' protocol.

For your understanding 'level 1' is the physical cable like CAT5e (often called RJ45-cable or Ethernet-cable).

An example how these 'levels' are used in an office network is your connection to the Internet:
- Your LAN connections are Ethernet
- Your WAN connection is DSL or GPRS/HDSPA
The fact is that the 'level 3' IP can be send on LAN and WAN, but the 'level 2' Ethernet is only available in the local area.

16.2 Oxygen 5 Digital Network implementation

The Oxygen 5 Digital system network levels are used as follow:

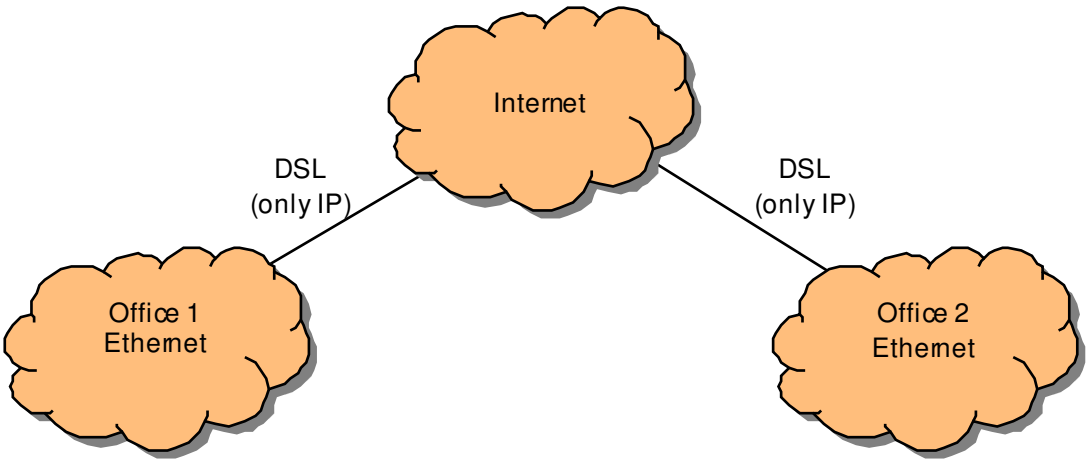
- Level 2 (Ethernet)
  Is used for the Oxygen 5 Digital internal communication, where you have to think of fader, knob data etc. etc.
- Level 3 (IP)
  Is used for the Oxygen 5 Digital configuration and service access.

This makes sense because then the Oxygen 5 Digital internal communication is independent of any IP address assignment and will always work independent on the IP-configuration. Second, the configuration is based on IP so with a good network design you can access configuration and service functionality over Internet.

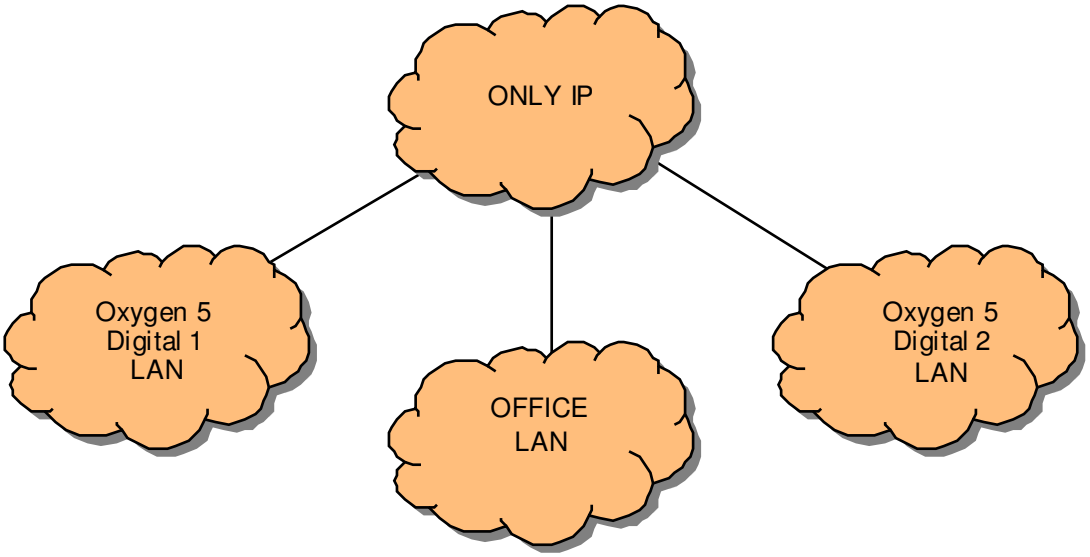
16.3 Network design

An Oxygen 5 Digital system require to have an own LAN (level 2) to work without risk of interference with office networks and or other Oxygen 5 Digital systems. The most basic way of describing this is: "Each Oxygen 5 Digital system requires its own Ethernet switch".

As you can understand this means there is no connection (so communication possible) between the separate LANs. This creates the problem you cannot access the console(s) from a single internet connection or from your office network. To overcome this problem you have to design the network with a separation on 'level 2' (Ethernet) but a connection over 'level 3' (IP) must be possible.
Most simple example on such separation is:



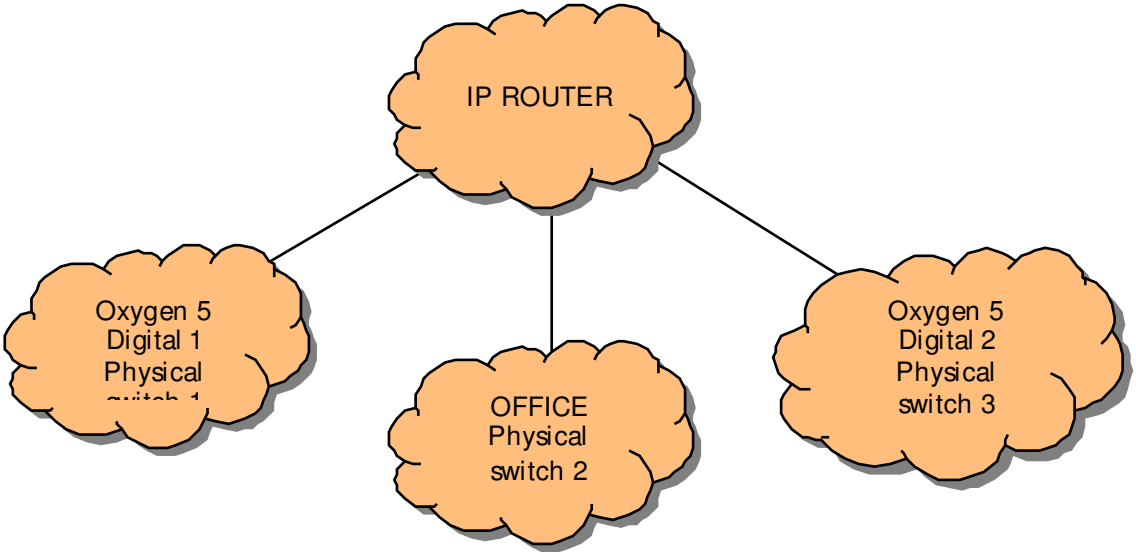
Here you see two LAN networks, both connected to internet. With correct IP-addressing Office 1 and 2 can reach each other using the IP protocol. However, there will be no interference between Office 1 and 2 on Ethernet. In fact, you have to create the same network level-structure in your studio for correct function.



In the next chapters we show you some solutions how to implement this structure. Because these structures are well known in network-technologies there are also several different solutions where you can pick the most interesting/efficient for you.

16.3.1 Practical solution 1: Physical separated switches and IP router

If you give the Oxygen 5 Digitals and OFFICE networks their own physical Ethernet switch, you ofcourse have good 'level 2' (Ethernet) separation. If you additional hook up an IP router to the Ethernet switches it is possible to amake IP routes between the different networks, without 'level 2' interference.



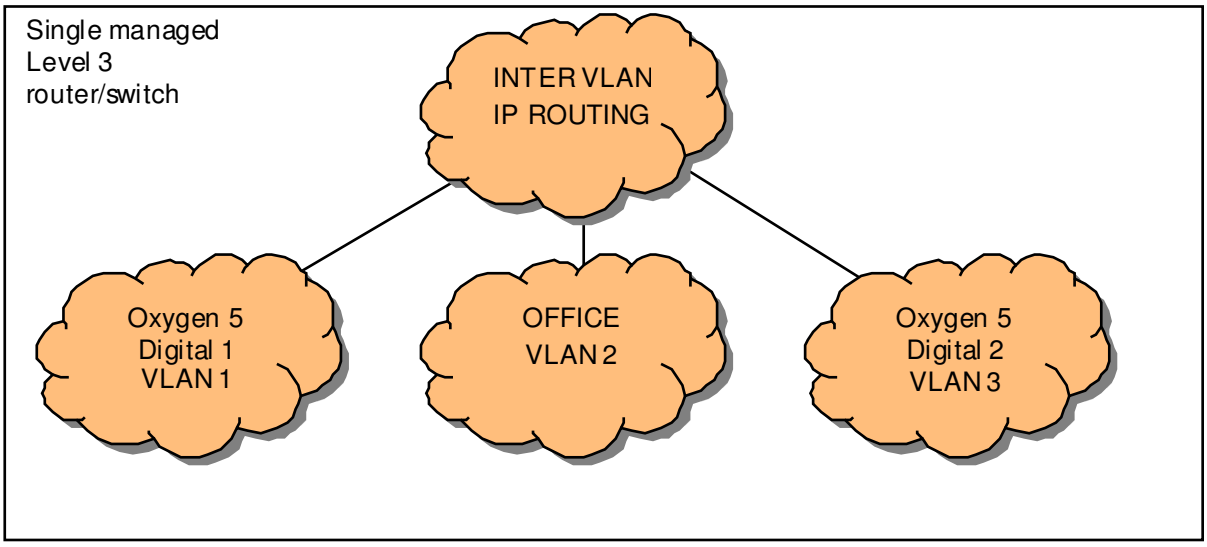
16.3.2 Practical solution 2: single managed level 3 switch/router

When you select an level 3 managed switch with the following features:

- Port VLAN
- Inter VLAN routing (IP)

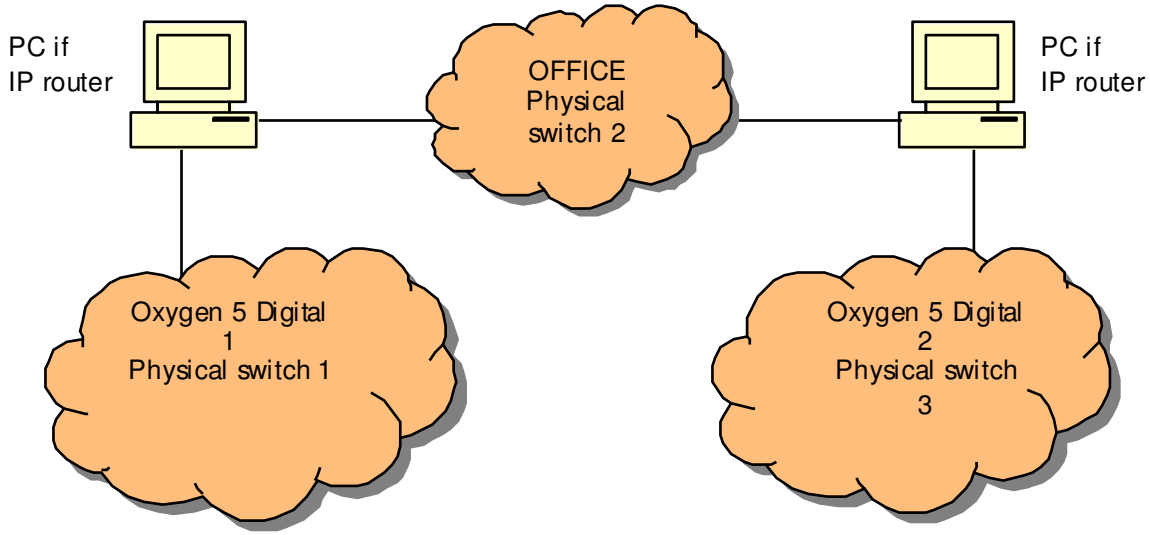
(VLAN stands for Virtual Local Area Network)

It will be possible to hook up all your network equipment to the same switch and configure the switch so it functions equal to 'Practical solution 1'. There fore you have to make 3 VLANs and make correct Inter VLAN IP routes.



16.3.3 Practical solution 3: Physical separated switches and PCs if IP router

It is also possible to have a PC configured to do IP routing. Of course, it is necessary to have two or more network cards before you can make IP routing. In our example we will show an setup with two PCs with two network card. *(As you can imagine it will also be possible with one PC using three network cards)*



On a PC you can give the command: `ipconfig /all`

This will show if your PC is configured as a router:

```
C:\Documents and Settings\Anton.dnr>ipconfig /all

Windows IP Configuration

        Host Name . . . . . . . . . . . . : RND3
        Primary Dns Suffix  . . . . . . . : dnr.local
        Node Type . . . . . . . . . . . . : Hybrid
        IP Routing Enabled. . . . . . . . : Yes
        WINS Proxy Enabled. . . . . . . . : No
        DNS Suffix Search List. . . . . . : dnr.local
                                            dnr.local
```

If not you have to use regedit to change a parameter to '1' in the registry (this requires a reboot).

HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\Tcpip\Parameters\IPEnableRouter

16.4 IP subnets and IP routes

When you have made your network design, where the level 2 is separated and you IP routing is available you need to care about correct IP addressing, subnets and routes. Altough your internal Oxygen 5 Digital configuration will function without problem. These IP addressing are necessary for:

- Configuration
- NTP time synchronization
- Remote access.

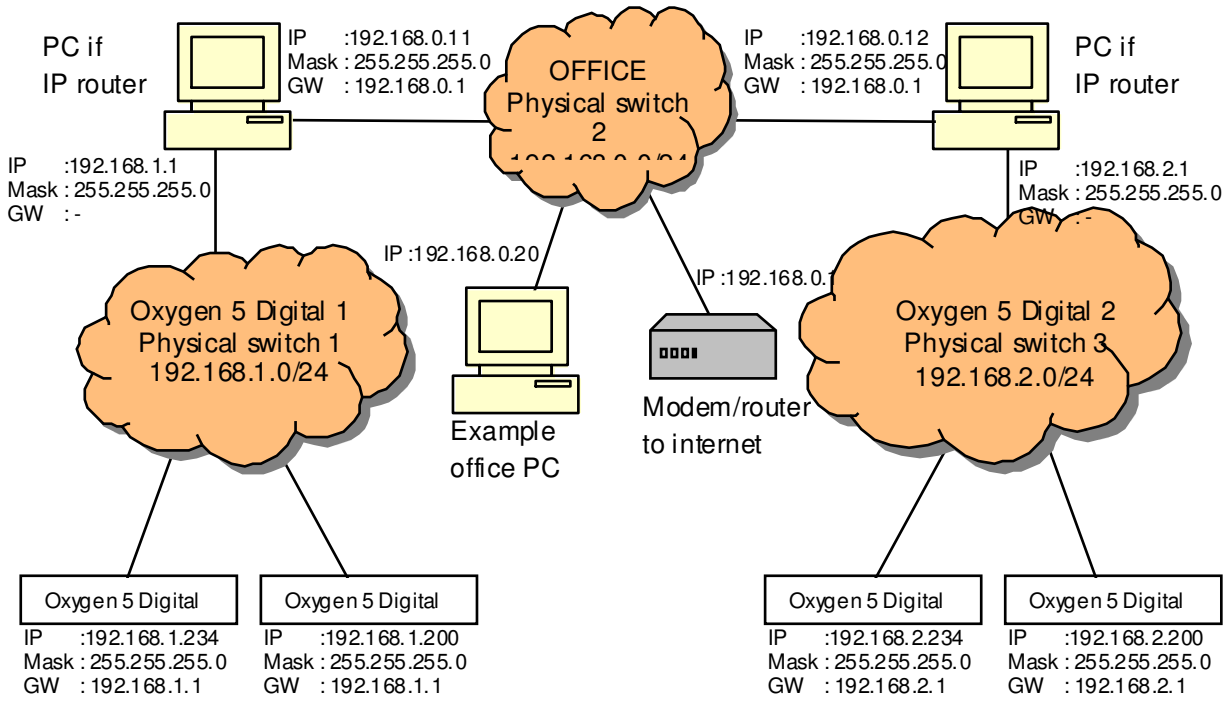
First you have to define a different subnet for each separated 1evel 2' network. Lets say:

Network	Oxygen 5 Digital 1	Oxygen 5 Digital 2	Office
network-address	192.168.1.0/24	192.168.2.0/24	192.168.0.0/24

Where 192.168.1.0/24 also may be written as:

IP Address : 192.168.1.x
Subnetmask : 255.255.255.0
Gateway : 192.168.1.y
DNS : <IP internet DNS Server> or <IP of modem/router>

For your information we have added IP information to practical solution 3:



When you no want to reach Oxygen 5 Digital 1 and Oxygen 5 Digital 2 from the Example office PC it is required make static routes. This because:

- all network addresses 192.168.1.0/24 need to be send via 192.168.0.11
- all network addresses 192.168.2.0/24 need to be send via 192.168.0.12

in the windows command line you can add permanent routes:

```
route -p ADD 192.168.1.0 MASK 255.255.255.0 192.168.0.11
route -p ADD 192.168.2.0 MASK 255.255.255.0 192.168.0.12
```

The same static routes are required if you want that the modem/router can access those subnets. You want the modem to access the subnets in case of remote access from internet. See the modem/router manual how to make static routes.

16.5 Remote access

Now you have setup your network and IP addressing correct you have to do one last step before you can remote access your Oxygen 5 Digital systems. There are also different methods for remote access, for all methods you have to check the manual of your modem/router how to setup.

1) VPN connection
   Virtual Private Network is a secure way to have remote access and you can use the internal IP numbers at your remote location.

2) Port redirection (found under NAT = Network Address Translation)
   In most modems/routers you can redirect ports where you can choose the 'Public port' which is accessed from internet and tell which internal IP and port it must be redirected to.

   For example HTTP is normally running on port 80, and this web server is running in your local network (IP 192.168.0.99). You also can access this webserver from remote if you make a port redirects like:
   Public port: 9080 is redirected to Private IP: 192.168.0.99, Private port: 80
   Public port: 9081 is redirected to Private IP: 192.168.0.100, Private port: 80

   If you are on a remote location start your webbrowser and type: <WAN-IP>:9080 you will see the internal webbrowser 1 and with <WAN-IP>:9081 you will see internal webbrowser 2.

   A port redirect is less secure than VPN.

3) Open ports (found under NAT = Network Address Translation).
   An open port you may give a internal private IP address, the disadvantage of an open port is you never can reach two IP-addresses on the same port number. So one port 80 open to webserver 1 you can not reach webserver 2 with an open port.

   An open port is less secure than port redirect, this because well known protocols are on their own well known port numbers.

If AXEL TECHNOLOGY ask for remote assistance it is required you make a redirect to internal Private IP 22 of the Oxygen 5 Digital rack. If we want to have remote access via port redirects in the IP subnet and IP route example as seen before we have to make the following configuration in the modem/router:

Static routes:
192.168.1.0/24 to 192.168.0.11
192.168.2.0/24 to 192.168.0.12

Port redirects:
Public port 9001 to Private IP: 192.168.1.200, Private Port: 22
Public port 9002 to Private IP: 192.168.2.200, Private Port: 22

17 Appendix B – Service

If you browse to the url http://192.168.0.200/service, where 192.168.0.200 should be your local Oxygen 5 Digital IP address you have a service menu with give some management possibilities.

Figure 32: Service menu

- **MambaNet node overview**
  Will show all nodes that are found in the local Ethernet network.

- **Generate sources**
  WARNING: this function deletes all sources and their configuration.
  After all sources are deleted, it will generate new sources regarding the 'rack layout' found.

- **Generate destinations**
  WARNING: this function deletes all destinations and their configuration.
  After all sources are deleted, it will generate new sources regarding the 'rack layout' found.

- **Templates**
  Shows a list of all known node types. The learner did read these templates from the nodes.

- **Stored configurations**
  Shows a list of all exported configurations.

- **Engine functions**
  Shows a list of all engine functions available.

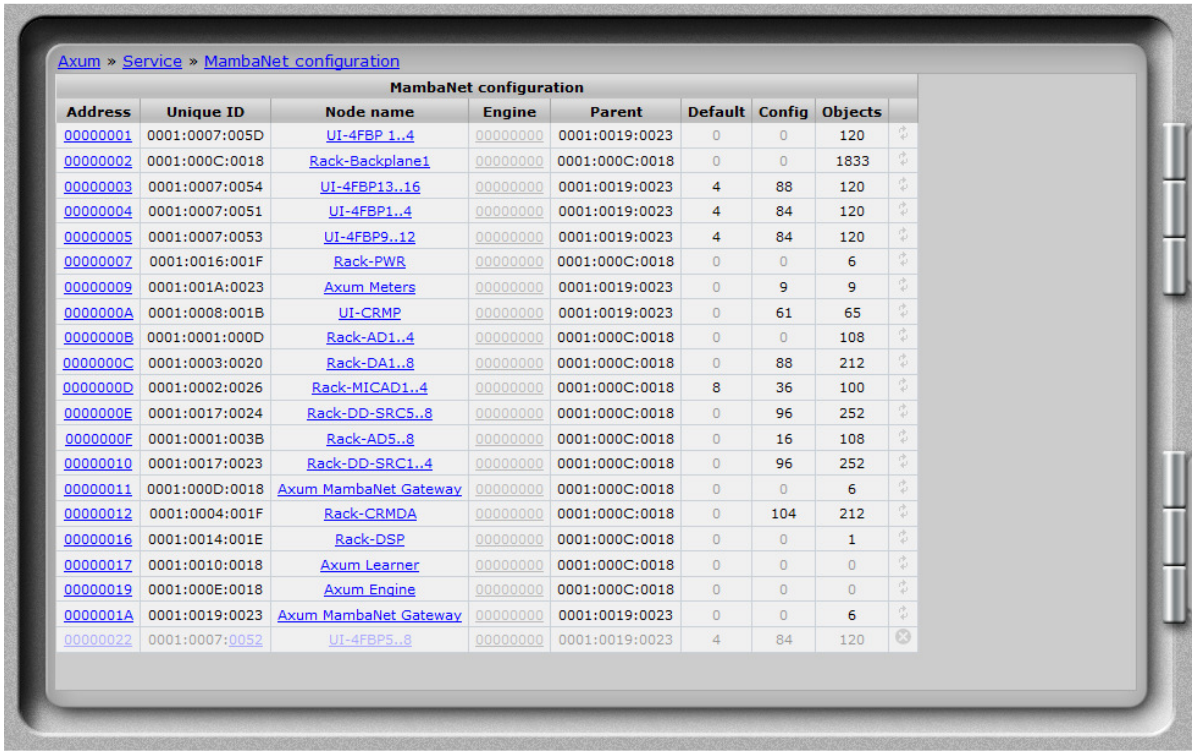
- **Package versions**
  Shows the packages, version and build/install date.

- **Download backup**
  Saves an file which is a complete image of the internal flash disk.

- **Change password**
  Here you can change the password for the webserver

17.1 MambaNet node overview

This pages shows all nodes found in the local Ethernet network. Also nodes that are not online can be seen as 'grayed out' nodes.



Address	Unique ID	Node name	Engine	Parent	Default	Config	Objects
00000001	0001:0007:005D	UI-4FBP 1..4	00000000	0001:0019:0023	0	0	120
00000002	0001:000C:0018	Rack-Backplane1	00000000	0001:000C:0018	0	0	1833
00000003	0001:0007:0054	UI-4FBP13..16	00000000	0001:0019:0023	4	88	120
00000004	0001:0007:0051	UI-4FBP1..4	00000000	0001:0019:0023	4	84	120
00000005	0001:0007:0053	UI-4FBP9..12	00000000	0001:0019:0023	4	84	120
00000007	0001:0016:001F	Rack-PWR	00000000	0001:000C:0018	0	0	6
00000009	0001:001A:0023	Axum Meters	00000000	0001:0019:0023	0	9	9
0000000A	0001:0008:001B	UI-CRMP	00000000	0001:0019:0023	0	61	65
0000000B	0001:0001:000D	Rack-AD1..4	00000000	0001:000C:0018	0	0	108
0000000C	0001:0003:0020	Rack-DA1..8	00000000	0001:000C:0018	0	88	212
0000000D	0001:0002:0026	Rack-MICAD1..4	00000000	0001:000C:0018	8	36	100
0000000E	0001:0017:0024	Rack-DD-SRC5..8	00000000	0001:000C:0018	0	96	252
0000000F	0001:0001:003B	Rack-AD5..8	00000000	0001:000C:0018	0	16	108
00000010	0001:0017:0023	Rack-DD-SRC1..4	00000000	0001:000C:0018	0	96	252
00000011	0001:000D:0018	Axum MambaNet Gateway	00000000	0001:000C:0018	0	0	6
00000012	0001:0004:001F	Rack-CRMDA	00000000	0001:000C:0018	0	104	212
00000016	0001:0014:001E	Rack-DSP	00000000	0001:000C:0018	0	0	1
00000017	0001:0010:0018	Axum Learner	00000000	0001:000C:0018	0	0	0
00000019	0001:000E:0018	Axum Engine	00000000	0001:000C:0018	0	0	0
0000001A	0001:0019:0023	Axum MambaNet Gateway	00000000	0001:0019:0023	0	0	6
00000022	0001:0007:0052	UI-4FBP5..8	00000000	0001:0019:0023	4	84	120

Figure 33: MambaNet node overview

- **Address**
  This is the MambaNet address used in this setup. This address is used for all communication and configuration.

- **UniqueID**
  This shows the 'ManufacturerID:ProductID:UniqueID' in hexadecimal format. When a node is offline you will see the 'UniqueID' is a link. This can be used to transfer the configuration of the offline node to another online node of the same type.

- **Node name**
  Here you can change a node name to a logical correct name, this makes identification in the system easier.

- **Engine**
  If you use multiple engines into a single Ethernet you can give here which engine is used by the node. Address '00000000' means the node communicates with all engines in parallel; which is most easy for systems with only one engine.

- **Parent**
  Easy node can store its parent node so we can determine the physical-location of nodes.

- **Default, Config and Objects**
  This column shows the numbers of objects and how many have a default value or configuration

- **Delete/Refresh**
  Grayed out nodes may be deleted by pressing the delete image.

WARNING: When a node is deleted the configuration is also removed!

Only nodes do not have a delete image, but a refresh image. This can be used to force a refresh of the node name and parent.

17.2 Templates

The learner continuously checks for unknown nodes. When a unknown node is found it will read the object information and store it in the database. A template is unique by:
ManufactureID, ProductID and Major Firmware Revision.

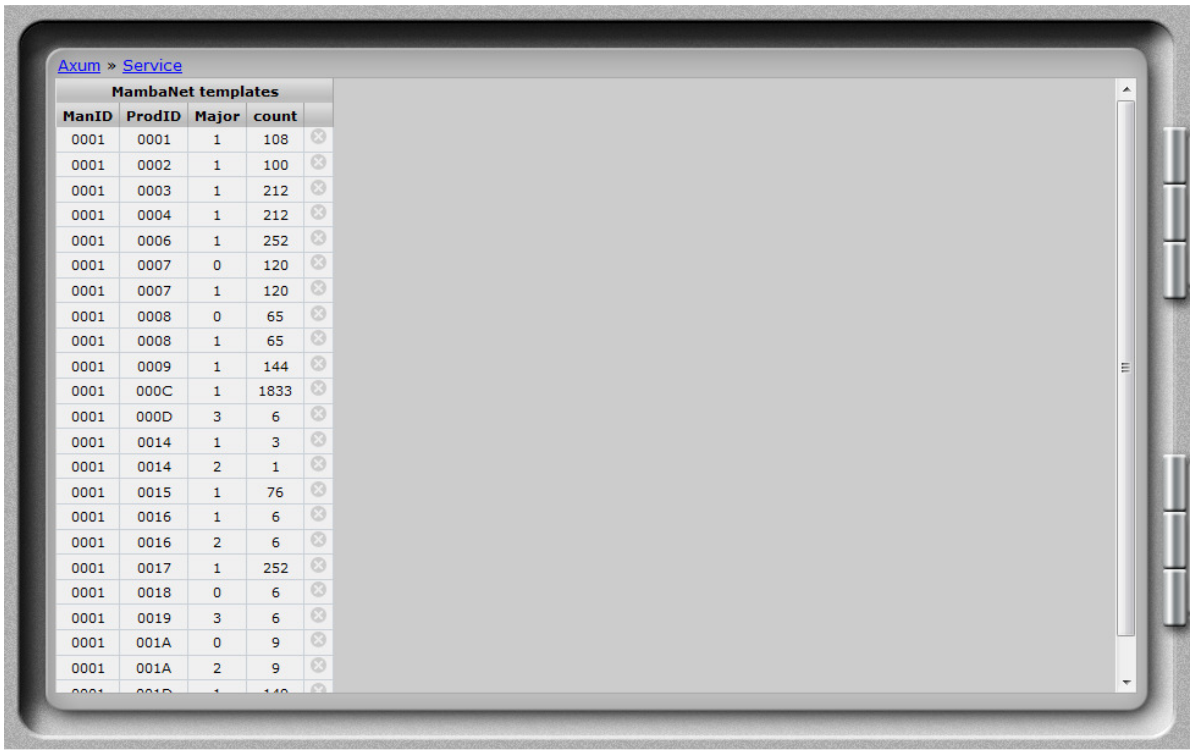


Figure 34: Node templates

- **Count**
  Shows the number of objects that are located in this template.

- **Delete**
  When because of a failure a template is wrong you may delete it so the learner will read the information again.

17.3 Stored configurations

The configurations that are exported are listed here. When you mistakenly did export a configuration you may delete it from here.

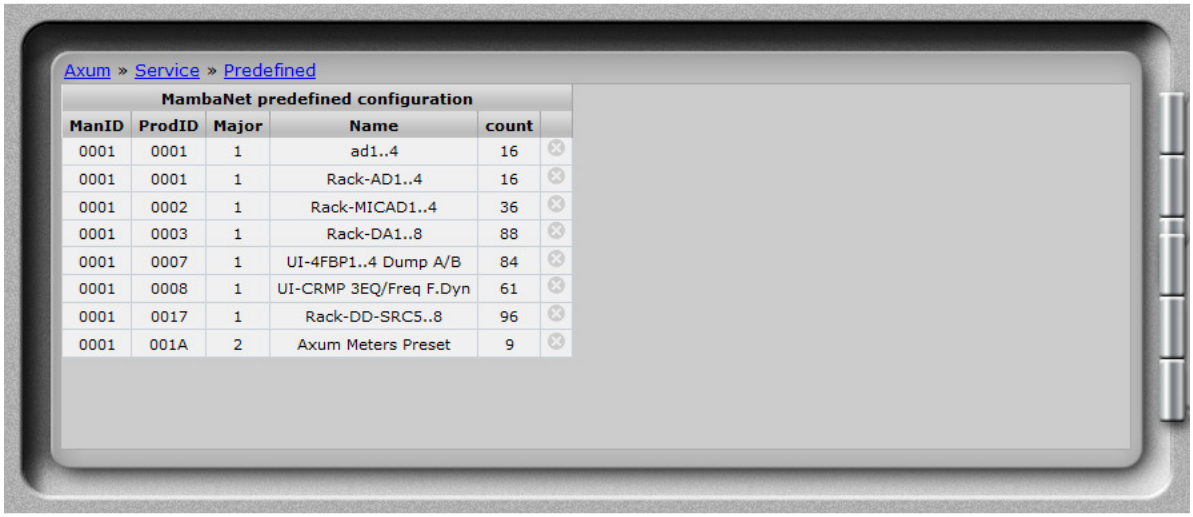
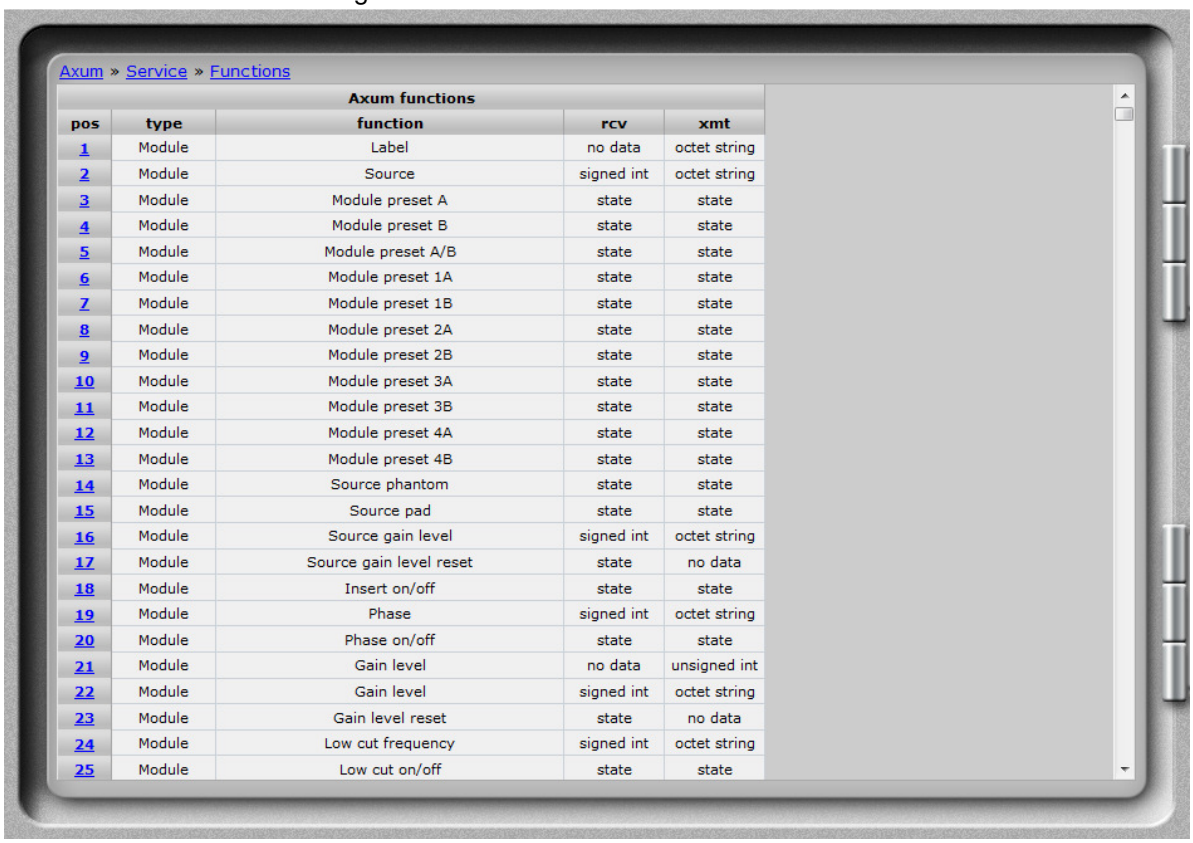

Axum » Service » Predefined
MambaNet predefined configuration
ManID ProdID Major Name count
0001 0001 1 ad1..4 16
0001 0001 1 Rack-AD1..4 16
0001 0002 1 Rack-MICAD1..4 36
0001 0003 1 Rack-DA1..8 88
0001 0007 1 UI-4FBP1..4 Dump A/B 84
0001 0008 1 UI-CRMP 3EQ/Freq F.Dyn 61
0001 0017 1 Rack-DD-SRC5..8 96
0001 001A 2 Axum Meters Preset 9

Figure 35: Stored configurations

- **Count**
  The count give the number of configured objects that are stored.

17.4 Engine functions

This is a list of all available engine functions.



Axum » Service » Functions

Axum functions

pos	type	function	rcv	xmt
1	Module	Label	no data	octet string
2	Module	Source	signed int	octet string
3	Module	Module preset A	state	state
4	Module	Module preset B	state	state
5	Module	Module preset A/B	state	state
6	Module	Module preset 1A	state	state
7	Module	Module preset 1B	state	state
8	Module	Module preset 2A	state	state
9	Module	Module preset 2B	state	state
10	Module	Module preset 3A	state	state
11	Module	Module preset 3B	state	state
12	Module	Module preset 4A	state	state
13	Module	Module preset 4B	state	state
14	Module	Source phantom	state	state
15	Module	Source pad	state	state
16	Module	Source gain level	signed int	octet string
17	Module	Source gain level reset	state	no data
18	Module	Insert on/off	state	state
19	Module	Phase	signed int	octet string
20	Module	Phase on/off	state	state
21	Module	Gain level	no data	unsigned int
22	Module	Gain level	signed int	octet string
23	Module	Gain level reset	state	no data
24	Module	Low cut frequency	signed int	octet string
25	Module	Low cut on/off	state	state

Figure 36: Engine functions

- **Pos**
  Here it is possible to reposition the functions for easier/faster access in the surface/rack configuration menu's

- **Type**
  Shows the group the functions belongs to and determines which number range is used.
  - Module: 1-128
  - Busses: 1-16
  - Monitor busses: 1-16
  - Global: 0
  - Source: 1-1280
  - Destination: 1-1280

- **Function**
  Is the description of the engine function

- **Rcv**
  The receive column shows which datatype is required at the object-sensor to be able to control this functions.

- **Xmt**
  The transmit column shows which datatype is required at the object-actuator to be able to receive data from the engine.

17.5 Package versions

This page shows the installed packages with their version number, build and install date.

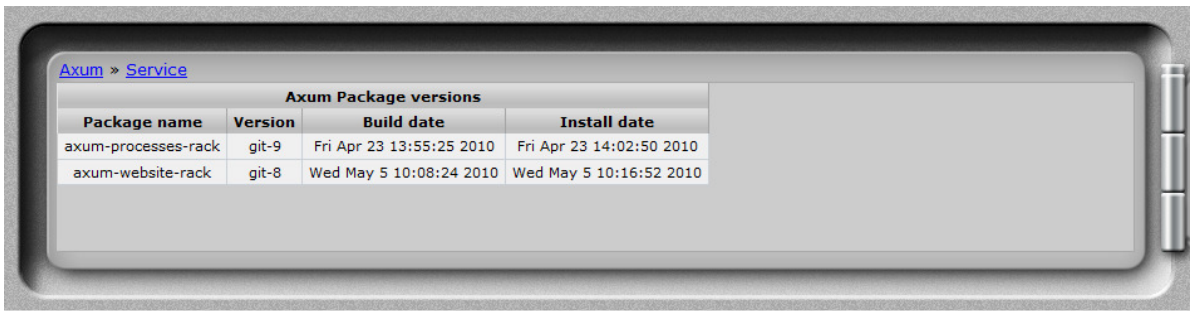


Figure 37: Package versions

17.6 Change password

The webserver requires authentication. On this page you change the username and password.

18 WEEE Directive – Informativa RAEE

In line with EU Directive 2002/96/EC for waste electrical and electronic equipment (WEEE), this electrical product must not be disposed of as unsorted municipal waste. Please dispose of this product by returning it to the point of sale or to your local municipal collection point for recycling.

In Übereinstimmung mit der Richtlinie 2002/96/EG des Europäischen Parlaments
und des Rates über Elektro- und Elektronik-Altgeräte (WEEE) darf dieses Elektrogerät nicht im normalen Hausmüll oder dem Gelben Sack entsorgt werden. Wenn Sie dieses Produkt entsorgen möchten, bringen Sie es bitte zur Verkaufsstelle zurück oder zum Recycling-Sammelpunkt Ihrer Gemeinde.

Conformément à la Directive 2002/96/EC sur les déchets d'équipements électriques et électroniques (DEEE), ce produit électrique ne doit en aucun cas être mis au rebut sous forme de déchet municipal non trié. Veuillez vous débarrasser de ce produit en le renvoyant à son point de vente ou au point de ramassage local dans votre municipalité, à des fins de recyclage.

In navolging van richtlijn 2002/96/EG van het Europees Parlement en de Raad betreffende afgedankte elektrische en elektronische apparatuur (AEEA) mag dit elektrische product niet als ongescheiden huisvuil worden weggedaan. Breng dit product terug naar de plaats van aankoop of naar het gemeentelijke afvalinzamelingspunt voor recycling.

In ottemperanza alla Direttiva UE 2002/96/EC sui rifiuti di apparecchiature elettriche ed elettroniche (RAEE), questo prodotto elettrico non deve essere smaltito come rifiuto municipale misto. Si prega di smaltire il prodotto riportandolo al punto vendita o al punto di raccolta municipale locale per un opportuno riciclaggio.

De conformidad con la Directiva 2002/96/CE de la UE sobre residuos de aparatos eléctricos y electrónicos (RAEE), este producto eléctrico no puede desecharse con el resto de residuos no clasificados. Deshágase de este producto devolviéndolo al punto de venta o a un punto de recogida municipal para su reciclaje.

I henhold til EU-direktiv 2002/96/EF om affald af elektrisk og elektronisk udstyr (WEEE) må dette udstyr ikke bortskaffes som usorteret husholdningsaffald. Bortskaf dette produkt ved at returnere det til salgsstedet eller til det lokale indsamlingssted, så det kan genbruges.

I linje med EU-direktiv 2002/96/EG om avfall som utgörs av eller innehåller elektriska eller elektroniska produkter (WEEE) får denna elektriska produkt inte bortskaffas som osorterat kommunalt avfall. Bortskaffa den i stället genom att lämna in den på försäljningsstället eller din lokala återvinningsstation.

EU:n sähkö- ja elektroniikkalaiteromudirektiivin (2002/96/EY) mukaisesti tätä elektroniikkalaitetta ei saa laittaa lajittelemattoman yhdyskuntajätteen sekaan. Hävitä laite palauttamalla se ostopaikkaan tai viemällä se elektroniikkaromun keräyspisteeseen.

De acordo com a Directiva Europeia 2002/96/EC sobre resíduos sólidos de equipamento eléctrico e electrónico (WEEE), este produto eléctrico não pode ser deitado fora juntamente com o lixo municipal indiferenciado. Por favor, no final da vida útil deste produto, devolva-o ao estabelecimento de aquisição, ou entregueo no local de recolha apropriado para reciclagem designado pelo seu município.

V souladu se smrnicí EU . 2002/96/ES o odpadních elektrických a elektronických zaYízeních (OEEZ) se tento elektrický výrobek nesmí likvidovat jako netYídný komunální odpad. PYi likvidaci tento výrobek vrat'te prodejci nebo ho odevzdejte k recyklaci do komunálního sbrného zaYízení.

Vastavalt EL direktiivile 2002/96/EÜ, mis käsitleb elektri- ja elektroonikaseadmete jäätmeid (WEEE), ei või antud toodet visata majapidamisjäätmete hulka. Palun tagastage antud toode taaskasutamise eesmärgil müügipunkti või kohaliku piirkonna jäätmekogumise punkti.

V súlade so smernicou 2002/96/ES o odpade z elekrických a elektronických zariadení (OEEZ) sa toto elektrické zariadenie nesmie odstranovat' ako netriedený komunálny odpad. Výrobok odstránte jeho vrátením v mieste nákupu alebo odovzdaním v miestnom zbernom zariadení na recyklovanie.

19 WARRANTY

The manufacturer offers a 1-year ex works warranty. Do not open the equipment. The warranty shall be voided if any of the warranty seals are broken. The manufacturer shall not be liable for damage of any kind deriving from or in relation to incorrect use of the product.

20 DECLARATION OF ROHS CONFORMITY

To minimize the environmental impact and take more responsibility to the earth we live, in accordance with European Union Directive 2002/95/EC, known commonly as RoHS (*Restriction of Hazardous Substances*),

We herewith declare,

Axel Technology srl
Via Caduti di Sabbiuno 6/F
40011 Anzola Emilia – Bologna - Italy

that the product listed below complies with the requirements of Directive 2002/95/EC, Article 4, paragraph 1 with reference to hazardous chemical substances:

Lead (Pb)
Hexavalent Chromium (CrVI)
Mercury (Hg)
PBB (Flame Retardant)
PBDE (Flame Retardant)
Cadmium (Cd)

Product Description: **Oxygen 5 Digital**

Authorized Company Representative:	Title of Signatory:	Date:
	Christian Sighinolfi – Technical Manager	24 December 2010

21 AXEL TECHNOLOGY CONTACTs

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